(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
13 December 2001 (13.12.2001)

PCT

(10) International Publication Number
WO 01/95054 A2

(51) International Patent Classification[7]: G06F

(21) International Application Number: PCT/US01/11020

(22) International Filing Date: 4 April 2001 (04.04.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

09/591,547	8 June 2000 (08.06.2000)	US
09/613,445	11 July 2000 (11.07.2000)	US
60/238,581	6 October 2000 (06.10.2000)	US
09/703,272	31 October 2000 (31.10.2000)	US

(71) Applicant: **DIGEO BROADBAND, INC.** [US/US]; 8815 122nd Avenue NE, Kirkland, WA 98033 (US).

(72) Inventors: **ALLEN, Paul**; 6451 West Mercer Way, Mercer Island, WA 98040 (US). **ISTVAN, Anthony**; 7213 Chanticleer Avenue SE, Snoqualmie, WA 98065 (US). **STETTNER, Armando**; 19238 184th Place NE, Woodinville, WA 98072 (US).

(74) Agent: **CHRISTENSEN, Kory**; Madson & Metcalf, 15 West South Temple, Suite 900, Salt Lake City, UT 84101 (US).

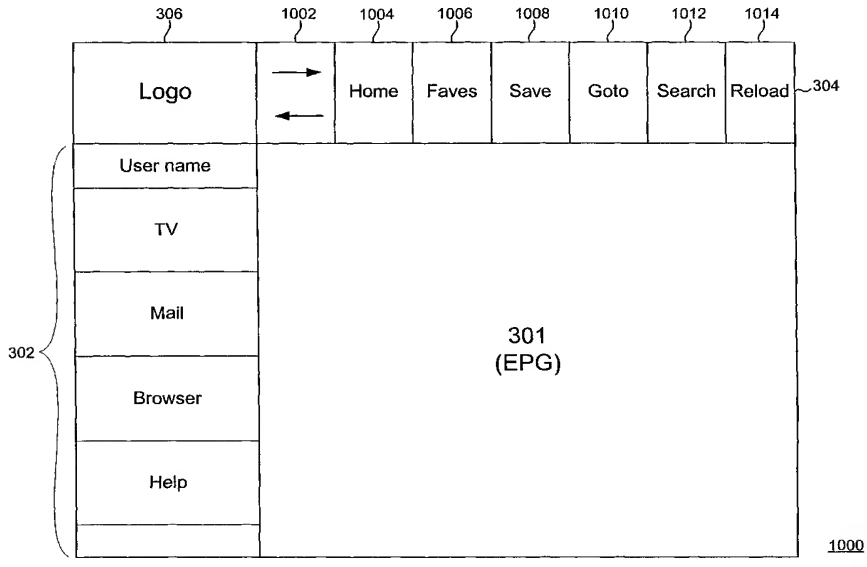
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: USER INTERFACE FOR PERSONALIZED ACCESS TO INTERNET-ENABLED TELEVISION



(57) Abstract: A personalized user interface (UI) to an Internet-enabled TV may include personalized category and content areas and a personal monitoring area. In accordance with an embodiment, the areas of the personalized UI may be arranged in a L-shaped configuration, and the features within the areas may be readily navigated using arrow buttons on a remote control. For example, up and down arrows may be used to navigate among the features in the personal monitoring area, while the left and right arrows may be used to navigate among the categories in the personalized category area.

WO 01/95054 A2

USER INTERFACE FOR PERSONALIZED ACCESS TO INTERNET-ENABLED TELEVISION

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates generally to interactive television systems and more particularly to a user interface for personalized access to Internet-enabled television.

DESCRIPTION OF THE BACKGROUND ART

Televisions and Internet technologies are beginning to converge. In particular, access to the World Wide Web via an Internet-enabled television system is progressing and becoming more popular. However, prior art user interfaces for such systems are limited in their capabilities and do not provide for user-friendly personalized access to both broadcast television and Internet content.

U.S. Patent No. 6,034,689, entitled "Web Browser Allowing Navigation Between Hypertext Objects Using Remote Control," discloses browser software implemented in a set-top box which allows a user to navigate using a remote control through World Wide Web pages. This browser software has limited capabilities and comprises a relatively simple user interface which allows for selection of hypertext anchors. In this simple user interface, access to Web pages is provided for separately from access to broadcast TV.

U.S. Patent No. 5,983,273, entitled "Method and Apparatus for Providing Physical Security for a User Account and Providing Access to the User's Environment and Preferences," discloses an Internet terminal that reads identification information from a smart card and transmits the identification information to a server. The server uses the identification information to locate configuration information. The configuration information may include customer preferences, such as the type of on-screen keyboard, the font used, background music options, and email options. A database of favorite uniform resource locators (URLs) is also disclosed. Although this patent discloses customized configuration of

an Internet terminal, it does not provide for user-friendly personalized access to both broadcast television and Internet content. In addition, access to Web pages is again provided for separately from access to broadcast TV.

SUMMARY OF THE INVENTION

User interfaces for Internet-enabled television systems have unique needs stemming from their need to display, in a user-friendly way, both broadcast television and Internet content. The present invention provides for personalized access to both broadcast television and Internet content in an integrated and user-friendly manner.

In accordance with an embodiment of the present invention, a personalized user interface (UI) to an Internet-enabled TV may include personalized category and content areas and a personal monitoring area. In accordance with an embodiment of the present invention, the areas of the personalized UI may be arranged in a L-shaped configuration, and the features within the areas may be readily navigated using arrow buttons on a remote control. For example, up and down arrows may be used to navigate among the features in the personal monitoring area, while the left and right arrows may be used to navigate among the categories in the personalized category area. Switching between navigation within the personal monitoring area and navigation within the personalized category area may occur automatically upon switching between using the up/down arrows and using the left/right arrows. A "Go" button or similar button may be used to activate an object selected, triggering an action associated with the object.

In accordance with one embodiment of the present invention, the L-shaped configuration of the personalized UI may be used in conjunction with and in contrast to another L-shaped configuration of UI controls. The two L-shaped configurations may be on opposite sides of a screen to provide rapid and easy visual differentiation between the two UI modes, while still providing a scalable rectangular-shaped area for the display area.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram depicting a system 100 for distributing multimedia content to Internet-enabled televisions in accordance with an embodiment of the present invention.

Fig. 2 is an illustrative screen frame of a display with a full-size video being displayed.

Fig. 3 depicts an example layout 300 of a user interface (UI) which has been activated in accordance with an embodiment of the present invention.

Fig. 4 is an illustrative screen frame of a UI which has been activated in accordance with an embodiment of the present invention.

Fig. 5 depicts an example layout 500 of a UI with a user submenu activated in accordance with an embodiment of the present invention.

Fig. 6 depicts an example layout 600 of a UI with a TV submenu 602 activated in accordance with an embodiment of the present invention.

Fig. 7 depicts an example layout 700 of a UI with television listing controls in the context-sensitive area 304 in accordance with an embodiment of the present invention.

Fig. 8 is an illustrative screen frame of a UI in a TV listing mode which provides an electronic programming guide (EPG) in accordance with an embodiment of the present invention.

Fig. 9 depicts an example layout 900 of a UI with a browser submenu 902 activated in accordance with an embodiment of the present invention.

Fig. 10 depicts an example layout 1000 of a UI with browser controls in the context-sensitive area 304 in accordance with an embodiment of the present invention.

Fig. 11 is an illustrative design for a remote control 1100 in accordance with an embodiment of the present invention.

Fig. 12 depicts a user interface which includes a media bar and an embedded media viewer in accordance with an embodiment of the present invention.

Fig. 13 depicts a user interface which includes a media bar for use with pop-up media viewers in accordance with an embodiment of the present invention.

Fig. 14 depicts a pop-up media viewer overlayed over a screen in accordance with an embodiment of the present invention.

Fig. 15 depicts a pop-up text viewer overlayed over a screen in accordance with an embodiment of the present invention.

Fig. 16 depicts a media bar used to provide general news as part of a general news screen in accordance with an embodiment of the present invention.

Fig. 17 depicts a media bar used to provide sports news as part of a sports news screen in accordance with an embodiment of the present invention.

Fig. 18 depicts a media bar used to provide financial news as part of a financial ("money") news screen in accordance with an embodiment of the present invention.

Fig. 19 depicts a media bar used to provide entertainment news as part of an entertainment ("scene") news screen in accordance with an embodiment of the present invention.

Fig. 20 depicts a first screen of a user interface for personalized access to an Internet-enabled TV in accordance with an embodiment of the present invention.

Fig. 21 depicts a second screen of a user interface for personalized access to an Internet-enabled TV in accordance with an embodiment of the present invention.

Fig. 22 is a schematic diagram of a system 2200 for information monitoring, delivery, and notification in accordance with an embodiment of the present invention.

Fig. 23 depicts an information selection menu in accordance with an embodiment of the present invention.

Fig. 24 depicts a notification format menu in accordance with an embodiment of the present invention.

Fig. 25 is a flowchart of a method for information monitoring, notification, and delivery in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 is a schematic diagram depicting a system 100 for distributing Internet content, in addition to TV content, in accordance with an embodiment of the present invention. In accordance with an embodiment of the present invention, the system 100 is integrated with a cable TV distribution system. Such cable TV distribution systems may include cable headends and are well known in the art.

The system 100 includes an Internet 102, a plurality of content sources 104, a plurality of distribution centers (depicted as headends or H/E) 106, and a plurality of client terminals (depicted as set top boxes or STB) 108. In addition, a content source 104 is depicted as receiving data from data feeds 112, advertisement servers 114, image sources 116, and streaming video sources 118.

The plurality of content sources 104 are coupled to the Internet 102. For example, a content source 104 may comprise a web site portal such as Go2Net.com, or a news web site such as CNN.com, or other types of sources. Each content source 104 may have various data feeds 112, servers 114, and sources 116/118 coupled to it.

For example, news or stock quote feeds 112 may be fed into the content source 104. Servers 114 may provide advertisements for insertion into multimedia content delivered by the content source 104. Sources 116/118 may provide images 116, streaming video 118, and other content to the content source 104. Various other feeds, servers and sources may also be coupled to the content source 104.

The Internet 102 comprises a network of networks and is well known in the art. Communications over the Internet 102 are accomplished using standard protocols such as TCP/IP (transmission control protocol/internet protocol) and other protocols. The Internet 102 is coupled to the plurality of distribution centers 106. For example, a distribution center 106 may comprise a cable headend (H/E).

Each distribution center 106 is coupled to a plurality of client terminals 108. For example, a client terminal 108 may comprise a set top box (STB), a personal computer, an interactive television set, or another type of communication device.

In alternative or in addition to the Internet 102 being used to distribute multimedia content from the content sources 104 to distribution centers 106, communications channels or networks 120 apart from the Internet 102 may couple one or more content source 104 to one or more distribution center 106. One example of such an alternate path for communications is illustrated in Fig. 1. Other configurations are also possible and meant to be included within the scope of the present invention.

Embodiments of the present invention may utilize other distribution or communications systems besides the one described above in relation to Fig. 1. Instead of a cable distribution system, other systems that may be used include telephone, ISDN, digital subscriber line (DSL), satellite, and other communications systems. The distribution or communications system may comprise a private network or a "walled garden" network.

Fig. 2 is an illustrative screen frame of a display with a full-size video being displayed. While the screen frame is a still frame, the actual video is a motion video comprising a multitude of frames in sequence.

Fig. 3 depicts an example layout 300 of a user interface (UI) which has been activated in accordance with an embodiment of the present invention. In one embodiment, when the UI is activated, the full-size display (see Fig. 2) shrinks in an "animated" fashion (i.e. with visible motion to a viewer) to occupy a reduced-size area 301 of the display. Alternatively, when the UI is activated, the L configured UI

may be superimposed (overlayed) over the full-size display. For example, shrinking the full-size display may be used if the display is showing TV or video content, while superimposing over the full-size display may be used if the display is showing pages which do not scale well. A "menu" button on a remote control unit may be used to activate and deactivate the UI.

The UI includes a group of permanent or primary controls 302 on a first side of the reduced-size area 301, a context-sensitive area 304 on a second side of the reduced-size area 301 (perpendicular to the first side), and a logo area 306 at the intersection of the two sides. In the example layout 300 shown in Fig. 3, the primary controls 302 include user ("user name"), TV, mail, browser, and help controls or control icons.

Selection of these primary control icons typically reveals a corresponding submenu. For purposes of illustration, described in detail below are a selection of such submenus. First, an example of a user submenu 502 is described below in relation to Fig. 5. Second, an example of the TV submenu 602 is described below in relation to Fig. 6. Third, an example of a browser submenu 902 is described below in relation to Fig. 9.

The context-sensitive area 304 may display different information (non-selectable items) and control icons (selectable items) depending upon the content in the display area 301. Initially, the context-sensitive area 304 may display information on the TV content currently being displayed in the display area 301. The information may include, for example, channel number/network call letters, program title, and current time.

As the content in the display area 301 varies, so will the information and control icons in the context-sensitive area 304. For example, first, when display area 301 contains TV content, then context-sensitive area 304 may have the information shown in Fig. 3. Second, when the display area 301 contains electronic programming guide (EPG) content, then context-sensitive area 304 may have the controls described in relation to Fig. 7. Third, when display area 301 contains web content, then context-sensitive area 304 may have the controls described in relation to Fig. 10.

The logo area 306 may display, for example, a logo and name for a service provider. In this example, the service provider is named Charter Communications™.

While the particular layout of Fig. 3 shows a "L" configured UI along the top and left sides of the display, other "L" configurations are also contemplated and within the scope of the present invention. For example, the "L" configured UI may instead be along the bottom and left sides, or the bottom and right sides, or the top and right sides.

In accordance with an embodiment of the present invention, a first pair of arrows on a remote control navigates among the primary controls, and a second pair of arrows (perpendicular to the first pair) navigates among the context-sensitive controls. Switching between navigation among the primary controls and navigation among the context-sensitive controls occurs automatically upon switching between using the first pair of arrows and using the second pair of arrows. An example of a remote control with such arrows is shown in Fig. 11 which is described below.

Fig. 4 is an illustrative screen frame of a UI which has been activated in accordance with an embodiment of the present invention. The frame shown in Fig. 4 is an implementation in close (but not exact) correspondence to the layout 300 of Fig. 3. Like the layout 300 in Fig. 3, the UI of Fig. 4 has primary controls on the left side, a context-sensitive area on the top, and a service provider's logo at the upper left corner.

Regarding the primary controls, "Bob234" is an example name of a currently active user. The "Surf" control corresponds to the browser control. Regarding the context-sensitive area, "Conde Nast Traveler" corresponds to the program title. "Channel 31, DSC" corresponds to the channel/network call letters. And, finally, "1:02 pm 02/28/00" corresponds to the current time (and date).

Fig. 5 depicts an example layout 500 of an UI with a user submenu 502 activated in accordance with an embodiment of the present invention. The user submenu 502 is activated by selecting the "user name" on-screen control from the

group of primary controls 302. The user submenu 502 may include various selections.

The "family" user is the default selection when the UI is activated. In one embodiment, the family user will be able to access only content which is accessible to all other users. In other words, the family user will have a "permission space" which is the intersection of permission spaces of all other users. Advantageously, this feature does not require a password to be entered upon turning on the TV. Nevertheless, this feature may be used to prevent children from accessing excessively violent or adult-oriented content. Moreover, the protection provided may extend to both TV and Internet content.

User #2, user #3, ..., user #N, may be individual user names, each of which may have a password to protect against entry by an unauthorized person. For example, the different users may correspond to members of a family. These user names may be sorted alphabetically in the user submenu 502. When an individual user name is selected and password, if any, entered correctly, then the user name becomes the active user.

The "manage users" and "settings" selections may be used to perform such function as: editing user name, password, and other user-related information for a specified user account; allowing users to block certain emails; allowing a user with administrative privileges to add or remove users and change user privileges; and so on.

Fig. 6 depicts an example layout 600 of a UI with a TV submenu 602 activated in accordance with an embodiment of the present invention. The TV submenu 602 is activated by selecting the "tv" on-screen control from the group of primary controls 302. The TV submenu 602 may include various selections.

The "listing" selection provides an electronic programming guide (EPG) to broadcast TV content. When the EPG is provide, corresponding controls are provided in the context-sensitive area 304 as described below in relation to Fig. 7. An example of such an EPG within the UI is illustrated in Fig. 8 which is also described below.

The "info" selection provides information relating to the TV program currently being viewed in the display area 301. The information may include a brief description of the program, names of actors/actresses, copyright year, and so on.

The TV "favorites" selection provides a user with a list of his/her favorite TV channels. When a TV channel is selected from the favorite list, then the embedded TV display changes to that channel.

The TV "recents" selection provides small screen video images of the last N (where N is a positive integer) TV channels viewed. For example, if N = 9, then video images of the 9 most recently viewed TV channels may be shown in a 3x3 matrix configuration in the embedded display 301. The number N may be fixed, or it may be user selectable.

The TV "search" selection provides a mechanism to search electronic program guide (EPG) listings for a particular program or programs. The search may be by program title, type of program (e.g., "basketball" may be searched to find basketball games being broadcast), by actor/actress, and so on.

These and other selections may be provided in the TV submenu 602. For example, "recent links" and "channel setup" selections are depicted in the TV submenu 602 of Fig. 6. The "recent links" selection provides access to hyperlinks recently received via a mechanism such as an ATVEF (Advanced TV Enhancement Forum) trigger. ATVEF is a cross-industry alliance of companies from broadcast and cable networks, television transport, consumer electronics, and personal computer industries. The "channel setup" selection allows a user to specify which TV channels are included as channels to tune to as part of the channel up/down tuning sequence.

Fig. 7 depicts an example layout 700 of a UI with television listing controls in the context-sensitive area 304 in accordance with an embodiment of the present invention. The television listing controls are provide when the display area 301 is used to provide an electronic programming guide (EPG).

The television listing controls shown in Fig. 7 include a "change day" control, an EPG "search" control, and a "stay on channel" control. The "change day" control allows the user to change the day of the program grid being shown by the

EPG. The EPG "search" control provides access to a mechanism to search EPG listings for a particular program or programs. The "stay on channel" control comprises a toggle control to activate/deactivate this option. When the option is deactivated, then the TV tuner actively tunes to the selected channel in the program grid of the EPG. When the option is activated, then the TV tuner remains on the channel that was being displayed before entering the EPG.

Fig. 8 is an illustrative screen frame of a UI in a TV listing mode which provides an electronic programming guide (EPG) in accordance with an embodiment of the present invention. The frame shown in Fig. 8 is an implementation in close (but not exact) correspondence to the layout 700 of Fig. 7. (The frame of Fig. 8, for example, does not show a "stay on channel" toggle control.) The EPG shown provides a programming grid including rows representing different channels, and columns representing different timeslots. Other implementations of an EPG are also possible.

Fig. 9 depicts an example layout 900 of a UI with a browser submenu 902 activated in accordance with an embodiment of the present invention. The browser submenu 902 is activated by selecting the "browser" on-screen control from the group of primary controls 302. The browser submenu 902 may include various selections.

The "home" selection may provide access to a web page designated by a service provider (e.g., a MSO) as its "home" page. In one embodiment, when going to the home page, the L configured UI retracts, so that the home page is shown on a full-size screen.

The "user defined" selections provide access to specialized web pages which may be focused to various categories of content. For example, the specialized web pages may focus on categories such as news, money, sports, weather, entertainment, and others. Again, in one embodiment, when going to a specialized web page, the L configured UI retracts, so that the specialized page is shown on a full-size screen.

These and other selections may be provided in the browser submenu 902. For example, "more," "go to," browser "favorites," and browser "search" selections are depicted in the browser submenu 902 shown in Fig. 9. The "more" button provides access to other categories of content in addition to those specified by the "user defined" selections described above. The "go to" button provides a query text box which allows a user to specify a URL to be displayed in the browser. The browser "favorites" button provides access to an organized data structure of favorite links. These browser favorites may be provided separately from the TV favorites, or they may be provided together in an integrated data structure. The browser "search" control provides access to a mechanism to search for particular Internet or Web content. The browser search may be provided separately from the EPG search, or they may be provided together in an integrated search feature.

Fig. 10 depicts an example layout 1000 of a UI with browser controls in the context-sensitive area 304 in accordance with an embodiment of the present invention. The browser controls are provided when the display area 301 is used to access World Wide Web content and other similar hyper linked content.

In the embodiment shown in Fig. 10, the left and right arrows 1002 may be individually selected. The left arrow scrolls or shifts the browser controls one button to the left. For example, in Fig. 10, the left arrow would cause the "home" button 1004 to scroll "behind" the arrows 1002 and a control button (not shown) to the right of the "reload" button 1014 to become visible at the right side of the context-sensitive area 304. Similarly, the right arrow scrolls or shifts the browser controls one button to the right.

In the embodiment shown in Fig. 10, the "home" button 1004 provides access to the web page designated by the user as his/her "home" page. The "faves" or favorites button 1006 provides access to a list of web pages or URLs that the user selects as his/her favorites. The "save" button 1008 enables a user to save a web page currently being displayed as a favorite page. The "go to" button 1010 provides a query text box which allows a user to specify a URL to be displayed in the browser. The "search" button 1012 provides access to a mechanism to search for particular Internet or Web content. The "reload" button 1014 causes the content currently in the display 301 to be refreshed.

Other buttons may be provided to the right of the "reload" button 1014. In one embodiment, the other buttons may include a "print" button, a "find" button, a "send" button, and an "info" button. The "print" button provides for printing, with various options, of the web page being displayed. The "find" button provides for finding a specified text string within the web page being displayed. The "send" button provides for sending an email with the web page being displayed or its URL attached thereto or contained therein. Finally, the "info" button provides additional information about the web page being displayed.

Fig. 11 is an illustrative design for a remote control 1100 in accordance with an embodiment of the present invention. Many other designs with similar functionality are, of course, possible and would be within the scope of the present invention.

The menu button 1102 may be used to activate and deactivate the UI as described above in relation to Fig. 3. The "Go To TV" button 1103 returns the display to a full-screen television display as illustrated by Fig. 2.

The up arrow 1108 and down arrow 1110 may be used to navigate among the primary controls 302. The left arrow 1104 and right arrow 1106 may be used to navigate among controls in the context-sensitive area 304. Switching between navigation among the primary controls and navigation among the context-sensitive controls occurs automatically upon switching between using the up/down arrows 1108/1110 and using the left/right arrows 1104/1106. The "Go" button (which may also be designated the "OK" button) activates the screen object currently selected (and highlighted), triggering an action associated with the object.

Fig. 12 depicts a user interface which includes a media bar and an embedded media viewer in accordance with an embodiment of the present invention. The depiction in Fig. 12 includes eleven features labeled using the letters A, B, C, D, E, F, G, H, I, J, and K.

As described below, the features may (or may not) be selectable. Preferably, selection is accomplished using arrow or other buttons on a remote control device. Selection may also be accomplished by other means (mouse

pointing devices, trackballs, joysticks, touch screens, voice recognition, and so on). When a feature or object is selected, it may be highlighted or marked in some manner to so indicate its selection. For example, feature labeled G in Fig. 12 is depicted as being highlighted by a "selection rectangle" outlining the feature.

Once a feature is selected, it may be activated. Such activation may be accomplished by pressing an "OK" or similar button on the remote control device. Activation may also be accomplished by other means (clicking a mouse button, etc.).

The feature labeled A in Fig. 12 comprises one of two selectable "more" buttons. The two more buttons point in opposing directions. In this embodiments, the opposing directions are up and down, but in other embodiments the opposing directions may be left and right. When a more button is activated, the current set of reduced-size images will be scrolled to the next set of reduced-size images which are not currently visible in the direction selected. If there are no more reduced-size images in the direction indicated by the more button, then that more button will be hidden (neither visible nor available) in the media bar.

The feature labeled B in Fig. 12 comprises one of a set of selectable reduced-size images. Preferably, these reduced-size images should be of sufficient quality and layout so that they can be recognized by a person with normal vision on an ordinary sized television from about 10 feet away. Preferably, the reduced-size image will provide a good visual indicator about the content of the associated digital content. When the digital content comprises a streaming video clip, then the reduced-size image may frequently (but not necessarily) be a first frame of the streaming video clip.

Each reduced-size image relating to a subject matter may operate as a hyperlink to associated digital content. A reduced-size image may be selected using techniques as described above. If the reduced-size image is located at an edge (either first or last position of) the media bar, and there is a next image "hidden" beyond the edge, then a logical scroll of the reduced-size images occur so as to reveal that next image.

Once the reduced-size image has been selected, then it may be activated using means as described above. Once activated, the associated digital content will be presented. For example, if the associated digital content comprises a streaming video clip, then the video clip will be loaded into the viewing window for playback. In a preferred embodiment, such playback may be initiated automatically if there is sufficient throughput to maintain the clips required bit rate. If not, the viewer may buffer the video stream automatically. If the video stream has an associated audio stream, then the associated audio stream may be encoded along with the video stream on a same track for purposes of synchronization.

Possibly in some embodiments, the associated digital content may comprise a still image. In that case, when the reduced-size image is activated, then the image will be loaded into an image viewer for display (typically at full-size or at least a size greater than the reduced-size image).

The feature labeled C in Fig. 12 comprises an area to display a caption for content being displayed by the embedded media viewer. In a preferred embodiment, the caption comprises non-selectable text.

The feature labeled D in Fig. 12 comprises a viewing window for displaying content by the embedded media viewer. In a preferred embodiment, the viewing window may display streaming video clips. Preferably, the streaming video clips will be created such that a first frame of the clip provides a good visual indicator about the clip's contents.

The feature labeled E in Fig. 12 comprises an elapsed time indicator for the content being displayed by the embedded media viewer. Such an elapsed time indicator would be used to display the amount of elapsed time during play of streaming video by the embedded media viewer.

The feature labeled F in Fig. 12 comprises a selectable fast forward button for the content being displayed by the embedded media viewer. In a preferred embodiment, activating the fast forward button causes the streaming media clip to be fast forwarded until it either reaches the end of the streaming media clip or until the play button is selected.

The feature labeled G in Fig. 12 comprises a selectable play/pause button. In a preferred embodiment, such a play/pause button may comprise a two-state button. When the streaming media clip is playing in the embedded media viewer, the play/pause button is in a "pause" state where it resembles and represents a pause button (not illustrated in Fig. 12). Activating the play/pause button from pause state causes pausing of the streaming media clip and further causes the play/pause button to change to a "play" state where it resembles and represents a play button (as illustrated in Fig. 12). Activating the play/pause button from play state causes playing of the streaming media clip and further causes the play/pause button to change to the "pause" state

The feature labeled H in Fig. 12 comprises a selectable rewind button. In a preferred embodiment, activating the rewind button causes the streaming media clip to rewind until either the beginning of the clip is reached or until the play button is activated.

The feature labeled I in Fig. 12 comprises an area to display a caption for subject matter depicted in a corresponding reduced-size image. In a preferred embodiment, the caption comprises non-selectable text. In accordance with one embodiment of the present invention, such captions may be optional.

The feature labeled J in Fig. 12 comprises a video icon corresponding to a subject matter. In a preferred embodiment, the video icon is non-selectable and indicates the presence of a streaming video clip associated with the subject matter. Such a streaming video clip may be viewable by way of the viewing window (D) described above.

The feature labeled K in Fig. 12 comprises an audio icon corresponding to a subject matter. In a preferred embodiment, the audio icon is non-selectable and indicates the presence of a streaming audio clip associated with the subject matter. Such audio content may be played on an audio system either integrated with the video system or external to the video system.

Other features not shown in Fig. 12 may also be included. For example, the embedded media viewer may include a progress bar or an elapsed

time indicator. Such a bar or indicator displays an indication of the progress of presentation of a media clip.

In accordance with an embodiment of the present invention, if both video and audio icon are present in correspondence to a subject matter, then both a streaming video clip and an associated streaming audio clip may correspond to the subject matter. Such streaming video and associated streaming audio are preferably played together synchronously by the media viewer.

Fig. 13 depicts a user interface which includes a media bar for use with pop-up media viewers in accordance with an embodiment of the present invention. Such an embodiment may be preferable for use on a user interface page where multimedia presentation functionality is desired, but where there is insufficient space available on the page for an embedded viewer. The depiction in Fig. 13 includes six features labeled using the letters A, B, C, D, E, and F.

The feature labeled A in Fig. 13 (like feature A in Fig. 12) comprises one of two selectable "more" buttons. The two more buttons point in opposing directions. In this embodiments, the opposing directions are left and right, but in other embodiments the opposing directions may be up and down. When a more button is activated, the current set of reduced-size images will be scrolled to the next set of reduced-size images which are not currently visible in the direction selected. If there are no more reduced-size images in the direction indicated by the more button, then that more button will be hidden (neither visible nor available) in the media bar.

The feature labeled B in Fig. 13 comprises a selectable text icon corresponding to a subject matter. Each text icon may operate as a hyperlink to associated text content. If there is only text content corresponding to a subject matter (i.e. no video, no audio, and no reduced-size image), then the text icon may be larger such that it overlays the space where the reduced-size image would otherwise be. The text icon may be selected using means as described above. Once the text icon has been selected, then it may be activated using means as described above. Once activated, the text content may be viewable by way of a pop-up text viewer as described below in relation to Fig. 15.

The feature labeled C in Fig. 13 (like feature B in Fig. 12) comprises one of a set of selectable reduced-size images. Preferably, these reduced-size images should be of sufficient quality and layout so that they can be recognized by a person with normal vision on an ordinary sized television from about 10 feet away. Preferably, the reduced-size image will provide a good visual indicator about the content of the associated digital content. When the digital content comprises a streaming video clip, then the reduced-size image may frequently (but not necessarily) be a first frame of the streaming video clip.

Each reduced-size image may operate as a hyperlink to associated digital content relating to a subject matter. A reduced-size image may be selected using means as described above. For purposes of illustration, the reduced-size image to the left of the one labeled C in Fig. 13 is shown to be currently selected by the selection rectangle outlining it. If the reduced-size image is located at an edge (either first or last position of) the media bar, and there is a next image "hidden" beyond the edge, then a logical scroll of the reduced-size images occur so as to reveal that next image.

Once the reduced-size image has been selected, then it may be activated using means as described above. Once activated, the associated digital content will be presented. For example, if the associated digital content comprises a streaming video clip, then the video clip will be loaded into the viewing window for playback. In a preferred embodiment, such playback may be initiated automatically if there is sufficient throughput to maintain the clips required bit rate. If not, the viewer may buffer the video stream automatically.

Possibly in some embodiments, the associated digital content may comprise a still image. In that case, when the reduced-size image is activated, then the image will be loaded into an image viewer for display (typically at full-size or at least a size greater than the reduced-size image).

The feature labeled D in Fig. 13 comprises an audio icon corresponding to a subject matter. In a preferred embodiment, the audio icon is non-selectable and indicates the presence of a streaming audio clip associated with the subject matter. The audio clip does not have to be related to video content. Such

audio content may be played on an audio system either integrated with the video system or external to the video system.

The feature labeled E in Fig. 13 comprises a video icon corresponding to a subject matter. In a preferred embodiment, the video icon is non-selectable and indicates the presence of a streaming video clip associated with the subject matter. The video clip may or may not have an associated audio clip. If there is an associated audio clip, the it is preferably provided on a same track as the video clip for synchronization purposes. Such a streaming video clip may be viewable by way of a pop-up media viewer as described below in relation to Fig. 14.

In one embodiment, if both video and audio icon are present in correspondence to a subject matter, then both a streaming video clip and an associated streaming audio clip may correspond to the subject matter. Such streaming video and associated streaming audio are preferably played together synchronously by the media viewer.

The feature labeled F in Fig. 13 comprises a caption (or headline) relating to the subject matter of a selected reduced-size image or a selected text icon. The caption is displayed upon selection (not activation) of the reduced-size image or text icon, and the caption changes as the selected image or icon changes.

In accordance with one embodiment of the present invention, such captions may be optional.

Fig. 14 depicts a pop-up media viewer overlayed over a screen in accordance with an embodiment of the present invention. The depiction in Fig. 14 includes ten features labeled using the letters A, B, C, D, E, F, G, H, I, and J.

The feature labeled A in Fig. 14 comprises an area to display a caption for content being displayed by the pop-up media viewer. In a preferred embodiment, the caption comprises non-selectable text.

The feature labeled B in Fig. 14 comprises a pop-up frame. The pop-up frame delimits the window for the pop-up media viewer.

The feature labeled C in Fig. 14 comprises an elapsed time indicator for the content being displayed by the pop-up media viewer. Such an elapsed time indicator would be used to display the amount of elapsed time during play of streaming video by the pop-up media viewer.

The feature labeled D in Fig. 14 comprises a selectable "done" button. Activating the done button causes the pop-up media viewer to be dismissed (go away), returning to the screen or page from which the pop-up media viewer was spawned.

The feature labeled E in Fig. 14 comprises an area to display a text or an image. In a preferred embodiment, the text or image is non-selectable and is used for purposes of brand marketing of the content provider or other business entity.

The feature labeled F in Fig. 14 comprises a selectable fast forward button for the content being displayed by the pop-up media viewer. In a preferred embodiment, activating the fast forward button causes the streaming media clip to be fast forwarded until it either reaches the end of the streaming media clip or until the play button is selected.

The feature labeled G in Fig. 14 comprises a selectable play/pause button. In a preferred embodiment, such a play/pause button may comprise a two-state button. When the streaming media clip is playing in the pop-up media viewer, the play/pause button is in a "pause" state where it resembles and represents a pause button (not illustrated in Fig. 14). Activating the play/pause button from pause state causes pausing of the streaming media clip and further causes the play/pause button to change to a "play" state where it resembles and represents a play button (as illustrated in Fig. 14). Activating the play/pause button from play state causes playing of the streaming media clip and further causes the play/pause button to change to the "pause" state

The feature labeled H in Fig. 14 comprises a selectable rewind button. In a preferred embodiment, activating the rewind button causes the streaming media

clip to rewind until either the beginning of the clip is reached or until the play button is activated.

The feature labeled I in Fig. 14 comprises a viewing window for displaying content by the pop-up media viewer. In a preferred embodiment, the viewing window may display streaming video clips. Preferably, the streaming video clips will be created such that a first frame of the clip provides a good visual indicator about the clip's contents.

The feature labeled J in Fig. 14 comprises a translucent background overlay which is laid over the screen or page from which the pop-up media viewer was spawned. The translucent background overlay serves to de-emphasize the screen or page from which the pop-up media viewer was spawned and to emphasize the pop-up media viewer. In a preferred embodiment, the transparency attribute of the translucent background overlay may be set at 65% or thereabout (say from 50% to 80%).

Other features not shown in Fig. 14 may also be included. For example, the pop-up media viewer may include a progress bar or an elapsed time indicator. Such a bar or indicator displays an indication of the progress of presentation of a media clip.

In accordance with another embodiment of the present invention, instead of a pop-up media viewer overlaying the page as shown in Fig. 14, an alternate media viewer may replace or cover the whole page. Such an alternate embodiment would provide a larger viewing area to present the media streams.

Fig. 15 depicts a pop-up text viewer overlayed over a screen in accordance with an embodiment of the present invention. The depiction in Fig. 15 includes three features labeled using the letters A, B, and C.

The feature labeled A in Fig. 15 comprises a text viewing window for displaying text content. When there is more than one page of text content to be displayed, a scrolling capability is used to move between pages. Preferably, a scrolling capability of a browser portion of the user interface may be used to provide the scrolling capability of the text viewing window.

The feature labeled B in Fig. 15 comprises a translucent background overlay which is laid over the screen or page from which the pop-up text viewer was spawned. The translucent background overlay serves to de-emphasize the screen or page from which the pop-up text viewer was spawned and to emphasize the pop-up text viewer. In a preferred embodiment, the transparency attribute of the translucent background overlay may be set at 65% or thereabout (say from 50% to 80%).

The feature labeled C in Fig. 15 comprises a selectable "done" button. Activating the done button causes the pop-up text viewer to be dismissed (go away), returning to the screen or page from which the pop-up text viewer was spawned.

In a preferred embodiment of the present invention, a media bar is designed for use in providing news stories. Such application of a media bar is illustrated in Figs. 16-19. Fig. 16 depicts a media bar used to provide general news as part of a general news screen. Fig. 17 depicts a media bar used to provide sports news as part of a sports news screen. Fig. 18 depicts a media bar used to provide financial news as part of a financial ("money") news screen. Fig. 19 depicts a media bar used to provide entertainment news as part of an entertainment ("scene") news screen. Note that the media bar illustrated in these figures uses a video icon which overlaps the reduced-size image, and audio and text icons which do not.

In another aspect of the present invention, latencies or delays in accessing digital content by way of the media bar may be reduced. Such reduction of latencies may be accomplished by various caching schemes. For example, the reduced-size image and related captions may be transmitted ahead of time and cached (stored) at a set top box. Such caching would speed up access to the media bar itself. As a further example, the streaming video, streaming audio, and/or text content may be cached (stored) at a headend of a cable distribution system. Such caching would speed up access to the streaming video, streaming audio, and/or text content available via the media bar.

In a further aspect of the present invention, the news stories made available via the media bar may be updated automatically. Such automatic updating

may be done periodically (for example, daily or hourly) or done as news is reported by the press.

Fig. 20 depicts a first screen of a user interface for personalized access to an Internet-enabled TV in accordance with an embodiment of the present invention. As depicted in Fig. 20, the personalized UI includes a display area 301 at the upper left corner of the screen, a category area 2002 below the display area 301, a content area 2004 on the bottom of the screen, and a personal monitoring area 2006 at the (upper) right side of the screen.

The category, content, and personal monitoring areas may comprise a second L-shaped configuration of the UI in accordance with a preferred embodiment of the present invention. While the particular layout of Fig. 20 shows the second L-shaped configuration of the UI along the bottom and right sides of the display, other L-shaped configurations are also contemplated and within the scope of the present invention. For example, the L-shaped configuration may instead be along the top and left sides, or the bottom and right sides, or the top and right sides.

In accordance with an embodiment of the present invention, the second L-shaped configuration may be along opposite sides from the first L-shaped configuration described above in relation to Figs. 3-10. Being on opposite sides provides for rapid and easy visual differentiation between the two UI modes, while still providing a scalable rectangular-shaped area for the display area 301.

In addition, the second L-shaped configuration which corresponds to the personalized UI maintains the navigational distinctions and advantages due to the interaction between the remote arrow buttons and the L-shaped configuration. In particular, up and down arrows 1108 and 1110 may be used to navigate among the features in the personal monitoring area 2006, while the left and right arrows 1104 and 1106 may be used to navigate among the categories in the category area 2002. Switching between navigation within the personal monitoring area 2006 and navigation within the category area 2002 may occur automatically upon switching between using the up/down arrows 1108/1110 and using the left/right arrows 1104/1106. Again, a "Go" button (depicted in the middle of the four arrows in Fig.

11) or similar button may be used to activate an object selected (and highlighted on the screen), triggering an action associated with the object.

In accordance with an embodiment of the present invention, the personalized UI may be activated by a button on a remote control. The button may be labeled for example, "MyTV." In one embodiment, when the personalized UI is activated, the full-size display (see Fig. 2) shrinks in an "animated" fashion (i.e. with visible motion to a viewer) to occupy a reduced-size area 301 of the display. Alternatively, when the personalized UI is activated, the second L-shaped configuration may be superimposed (overlayed) over the full-size display. For example, shrinking the full-size display may be used if the display is showing TV or video content, while superimposing over the full-size display may be used if the display is showing pages which do not scale well.

In accordance with an embodiment of the present invention, the category area 2002 includes content categories which may be personalized to the user. The example depicted in Fig. 20 includes News, Money, Sports, Scene, and Weather categories. Other content categories may be included, instead, depending upon the user's interests. In addition, more or fewer content categories may be included. Each content category provides access to content which may be further personalized to suit a particular user.

In accordance with an embodiment of the present invention, the content area 2004 may be used to display content relating to a content category when that category is activated. For example, Fig. 20 depicts personalized weather content being displayed in the content area 2004 in correspondence with the activation of the weather category. The weather content shown is further personalized in that weather information for a particular area (in this example, Seattle, WA) is being displayed. The particular area may be selected by the particular user. Alternately, the particular area may be automatically selected based upon the known location of the STB 108.

Also illustrated in Fig. 20 is the selection (and highlighting on the screen) of the Money category. Once so selected (for example, using the left/right arrow buttons as described above), the Money category may be activated (for

example, using the "Go" button as described above). Fig. 21 shows a screen after activation of the Money category for purposes of illustration. The content area 2004 in Fig. 21 depicts a headline relating to finance, below which is a stock ticker. The headline may be personalized to a user's particular interests within finance. More than one headline may be included, and the headlines may link to corresponding articles. The stock ticker may be used to display market quotes for a personalized selection of stocks or other financial securities.

In accordance with one embodiment of the present invention, the personal monitoring area 2006 displays monitoring features regarding various communications to a user. For example, the personal monitoring area 2006 depicted in Fig. 20 displays monitoring features for instant messaging, electronic mail, sharing, programming reminders, and the like.

The instant messaging feature monitors and provides access to electronic chat between the present user and other users. For example, the Instant Message feature area depicted in Fig. 20 shows that a user called "Molly P" is active and available for instant message communications with the present user. By selecting and activating the instant message control in the personal monitoring area 2006, an instant messaging interface may be provided to simultaneously view and send instant messages. The instant messaging interface may utilize the display area 301 or may utilize one or more pop-up windows. Instant messages may be received from and sent to other users via their set top boxes 108 or via other devices that have compatible instant messaging software modules.

The electronic mail feature provides functionality for electronic mail (e-mail) between the user and other users. For example, the Mail feature area depicted in Fig. 20 shows that three (3) new e-mail messages have been received for the present user. By selecting and activating the Mail control in the personal monitoring area 2006, an e-mail interface is provided to view, compose, and send electronic mail messages. The e-mail interface may utilize the display area 301 or may utilize one or more pop-up windows. E-mail may be received from and sent to other users via their set top boxes 108 or via other devices that have compatible electronic mail software modules.

The sharing feature may provide functionality for sharing a viewing experience between users. For example, a first user may contact a second user via the sharing feature to indicate that the first user is interested in sharing a viewing experience with the second user. Upon acceptance by the second user, the viewing by the second user may be controlled by the first user.

The reminders feature may provide functionality to remind a user of upcoming or current programming or other events. For example, as depicted in Fig. 20, the reminders feature may remind a user that a Denver vs. Detroit sporting event is to begin in 30 minutes. Events triggering such reminders may be set by the user or may be suggested by a system depending on preferences or behavior of the user.

Fig. 22 illustrates a system 2200 for information monitoring, delivery, and notification according to an embodiment of the invention. The system 2200 may be used in conjunction with the personal monitoring area 2006 of Fig. 20 (e.g., to configure the same) or as a separate feature of the UI. In various embodiments, the system 2200 includes a user registration component 2202, a communication channel reservation component 2204, an information monitoring component 2206, an information delivery component 2208, and a user notification component 2210.

In one embodiment, the user registration component 2202 allows a user to request information for automatic monitoring and delivery of the same in the form of updates, alerts, reminders, notifications, and the like. The system 2200 may provide access to information from a wide variety of topics, such as stock prices, ski conditions, weather conditions, flight information, school lunch menus, sporting scores, election results, and the like.

As shown in Fig. 23, the registration component 2202 provides, in one embodiment, an information selection menu 2302 to permit the user to select at least one information category. The information selection menu 2302 may be hierarchically organized such that the user may rapidly locate the information of interest. For example, in the menu 2302 of Fig. 23, the user may quickly "drill down" through the categories of "Entertainment," "Sports," and "Football," to reach the desired information topic, e.g., the "Denver v. Detroit" football game.

In one embodiment, a user accesses the menu 2302 via a web browser or the like within the STB 108. The menu 2302 may be hosted within a headend 106, content source 104, or other location, such as an Internet server. In alternative embodiments, the menu 2303 and information categories may be stored locally within the STB 108 and may be periodically refreshed by the headend 106 or the like.

In one embodiment, the user optionally specifies delivery criteria for delivering the requested information. As described more fully below, once the delivery criteria are met, the information is retrieved from an information source 104 and delivered to the STB 108, after which the user is notified in the requested manner.

For example, as shown in Fig. 23, the user has selected delivery criteria of "Notify me 30 minutes before the Denver v. Detroit football game." Various other types of triggering events may be defined for other information types. For television programming, for instance, the criteria may be a time interval before the programming begins. For e-mail, the criteria may be when new e-mail arrives or when e-mail arrives from a particular user. For stocks, the criteria may be when a particular stock price rises above or drops below a particular threshold.

The delivery criteria may be limited to pre-defined selections in the menu 2302 or may be fully configurable by the user. In some cases, default criteria may be provided where none are specified by the user. For example, a default criteria may simply be the availability of the requested information.

Of course, the information selection menu 2302 of Fig. 23 is provided for example purposes only and may be embodied in various forms without departing from the spirit and scope of the invention. The present invention contemplates other user interface types, such as pop-up windows, radio buttons, drop-down menus, and the like.

As shown in Fig. 24, the user registration component 2220 also provides, in one embodiment, a notification format menu 2402 by which the user may indicate the manner in which the user wishes to be notified of the monitored

information. Various notification formats may include, for example, alerts, always-active formats, button-press-required formats, e-mail notifications, and the like.

Alerts may include any type of textual, audio and/or video notification that includes the requested information or a portion thereof. For instance, an alert may include a pop-up text message, video clip, audio clip, or the like. In various embodiments, the user may customize the alert using the menu 2402 to make the alert as overt or unobtrusive as the user desires.

Always-active formats may take the form of a transparent overlay of text, graphics, or the like, superimposed over the program being displayed on the television. The transparent overlay may be situated at the bottom, top, or user-selected location of the television. In the case of a text message, the message may be static or horizontally scrolling (e.g., a ticker).

In the button-press-required format, the monitored information is not immediately displayed upon the occurrence of the triggering event. Rather, after receiving a visually-perceptible or audible notification, such as an icon, tone, tune, etc., the user must perform a subsequent action, such as pushing a button or the like on a remote control, in order to display the requested information.

Of course, the notification formats are not limited to those discussed above. Other formats may include, for instance, email notification to the user, email notification to a different user, launching of a web browser configured to display the requested information from a particular website, or displaying the information on a remote control equipped with a display device, such as an integrated LCD screen.

After the user has selected the information to monitor, the delivery criteria (or default criteria), and the notification format (collectively, the "user registration information"), the registration component 2202 preferably stores the user registration information. In one embodiment, the user registration information is stored at a headend 106, content source 104, or other suitable location within the system 100.

Those skilled in the art will recognize that the user registration component 2202 may be embodied as hardware, software, and/or firmware within a

headend 106, a content source 104, the STB 108, and/or a computer within the Internet 102.

In one embodiment, after the user registration information is obtained, the communication channel reservation component 2204 reserves network resources to enable delivery of the requested information to the STB 108 once the delivery criteria (or default criteria) are satisfied. In the context of a cable delivery network, reserving network resources may include reserving an MPEG (Moving Picture Expert Group) channel for relaying the information from a local or regional headend 106, content source 104, or the like, to the user's STB 108.

According to the MPEG standard, channel data is packaged into data packets. Each data packet includes a packet identifier (PID). The PID indicates to a channel decoder within the STB 108 the channel to which the packet belongs.

MPEG allows for the multiplexing of a plurality of channels of video, audio, and other data in a single transmission. The receiving STB 108 examines the PID of each data packet to determine whether the user has indicated a desire to tune into that particular channel. While some of the MPEG channels may be assigned to particular television channels, other MPEG channels may be reserved for special purposes. Of these reserved MPEG channels, one or more may be reserved specifically for transmission of the requested information.

In one embodiment, reserving an MPEG channel includes designation of a channel at the headend 106 as a reserved channel. In one embodiment, an MPEG private information indexing table is updated to indicate which PID will be used for sending the requested information to the STB 108.

Preferably, the STB 108 is notified as to how and possibly when the information will be sent. This is accomplished, in one embodiment, by sending the private information indexing table to the STB 108. When the table is received, both the sender of the information (e.g., the headend 106) and the receiver (e.g., the STB 108) know which channel will be used to transmit the information. In one embodiment, the STB 108 establishes information monitoring triggers to review data

packets received on the reserved MPEG channel in order to detect the information when it is received by the STB 108.

The present invention contemplates all forms of network communication including wireless, satellite, telephone, cable, and the like. The present invention also contemplates various protocols which allow communications between components of a particular network. Consequently, the present invention includes reservation of communications resources consistent with the particular physical communications medium and protocols being used.

In one embodiment, the information monitoring component 2206 correlates all of the information monitoring requests from the various STBs 108 in the system 100. The information monitoring component 2206 may classify the requests by the information to be monitored, the delivery criteria, the notification format, and which STBs 108 are requesting the same information.

After the requests are classified, the information monitoring component 2206 begins to monitor one or more information sources 104. Once the delivery criteria have been satisfied for a particular request, the information monitoring component 2206 sends the requested information to the information delivery component 2208 for delivery to the appropriate STB(s) 108. In some cases, the requested information may comprise a message that a particular event has occurred, e.g., "It is now 30 minutes until the Denver v. Detroit football game."

In one embodiment, the requested information may be sent by a headend 106 or the like to an STB 108 in a single transmission. In some cases, however, a headend 106 may be configured to send a certain number of data packets in a particular sequence and then repeat the sequence. This looping through a set of data packets is known as a "carousel." The set of data packets in a carousel may be modified over time.

Generally, television programs are transmitted as a single sequence of video and audio data which is not repeated. However, data packets comprising an electronic programming guide (EPG), for example, may be transmitted in a carousel fashion. Carousel data transmissions generally work best with smaller data sets that

do not change rapidly over time. Such data sets include, for instance, an EPG, a calendar of local events, a stock ticker, a set of brief news stories, and the like.

In one embodiment, the information delivery component 2208 temporarily stores the requested information in a buffer or cache at a headend 106. Thereafter, the information is converted into MPEG data packets with a PID that corresponds to the reserved MPEG channel. Finally, the information delivery component 2208 sends the data packets to the STB 108 that requested the particular information.

As an example, multiple users may have requested score updates for the Denver v. Detroit football game. Each user may have specified delivery criteria including an update interval, such as "every five minutes" or "at the end of each quarter," etc. At the requested interval, the information monitoring component 2206 retrieves the score information from a sports data source 104 on the Internet 102 and then provides the score data to the information delivery component 2208 for delivery to the corresponding STBs 108 using one or more reserved MPEG channels.

As with the other components of the system 2200, the information monitoring component 2206 and information delivery component 2208 may be implemented in software, hardware or firmware, within an STB 108, headend 106, information source 104, or other computer connected to the system 100.

In one embodiment, the information monitoring triggers in the STB 108 detect incoming data packets using the reserved channel. Once the data packets are detected, they are decoded by the STB 108 and delivered to the user notification component 2210.

In one embodiment, the user notification component 2210 notifies the user of the delivered information using the requested notification format, as previously described. For example, as shown in FIG. 20, the user notification component 2210 may display a reminder in a designated area of the UI, such as the personal reminder area 2006, e.g. "Denver v. Detroit in 30 minutes."

Fig. 25 is a flowchart of a method 2500 for information monitoring, delivery, and notification using an Internet-enabled television system according to an embodiment of the invention. The method 2500 begins by receiving 2502 a user selection of an information category, delivery criteria, and a notification format. Thereafter, a communication channel is reserved 2504 for delivery of the information, in which the STB 108 is informed as to how (e.g., on what MPEG channel), the information will be delivered.

An information source 104 is then monitored 2506. Once the delivery criteria are satisfied, the requested information is delivered 2508 from the information source 104 to the user's STB 108 using the reserved communication channel. Thereafter, the user is notified 2510 concerning the information using the requested notification format.

While specific embodiments and applications of the present invention have been illustrated and described, it is to be understood that the invention is not limited to the precise configuration and components disclosed herein. Various modifications, changes, and variations which will be apparent to those skilled in the art may be made in the arrangement, operation, and details of the methods and systems of the present invention disclosed herein without departing from the spirit and scope of the invention.

WHAT IS CLAIMED IS:

1. A user interface for an Internet-enabled television system, the user interface comprising:

a display area for displaying broadcast television and Internet related content;

a personalized category area which includes a plurality of personalized content categories and which provides access to content in those personalized content categories; and

a personal monitoring area for monitoring a plurality of types of personal communications and for providing access to interfaces for those types of personal communications.

2. The user interface of claim 1, further comprising a content area for displaying content in a personalized content category when the category is activated.

3. The user interface of claim 1, further comprising:

a first side of the display area along which the personalized category area is aligned; and

a second side of the display area along which the personal monitoring area is aligned,

wherein the first and second sides are perpendicular to each other so as to form a L-shaped configuration.

4. The user interface of claim 3, wherein a first pair of arrows of an input device are used to navigate among categories in the personalized category area, and where a second pair of arrows on the input device are used to navigate among features in the personal monitoring area.

5. The user interface of claim 4, wherein the input device comprises a remote control device.

6. The user interface of claim 4, wherein switching from navigation among categories in the personalized category area to navigation among features in

the personal monitoring area occurs automatically upon switching from use of the first pair of arrows to use of the second pair of arrows, and

wherein switching from navigation among features in the personal monitoring area to navigation among categories in the personalized category area occurs automatically upon switching from use of the second pair of arrows to use of the first pair of arrows.

7. The user interface of claim 6, further comprising a non-personalized user interface mode which comprises:

the display area;

a group of primary controls;

a plurality of groups of context-sensitive controls;

a third side of the display area along which the group of primary controls are aligned;

a fourth side of the display area along which the group of context-sensitive controls are aligned;

a third pair of arrows of an input device for controlling navigation among the primary controls; and

a fourth pair of arrows on the input device for controlling navigation among the context-sensitive controls,

wherein switching from navigation among the primary controls to navigation among the context-sensitive controls occurs automatically upon switching from use of the third pair of arrows to use of the fourth pair of arrows,

wherein switching from navigation among the context-sensitive controls to navigation among the primary controls occurs automatically upon switching from use of the fourth pair of arrows to use of the third pair of arrows, and

wherein the third and fourth sides of the display are opposite to the first and second sides of the display.

8. The user interface of claim 7, wherein the first and second pairs of arrows comprise a same four arrows as the third and fourth pairs of arrows.

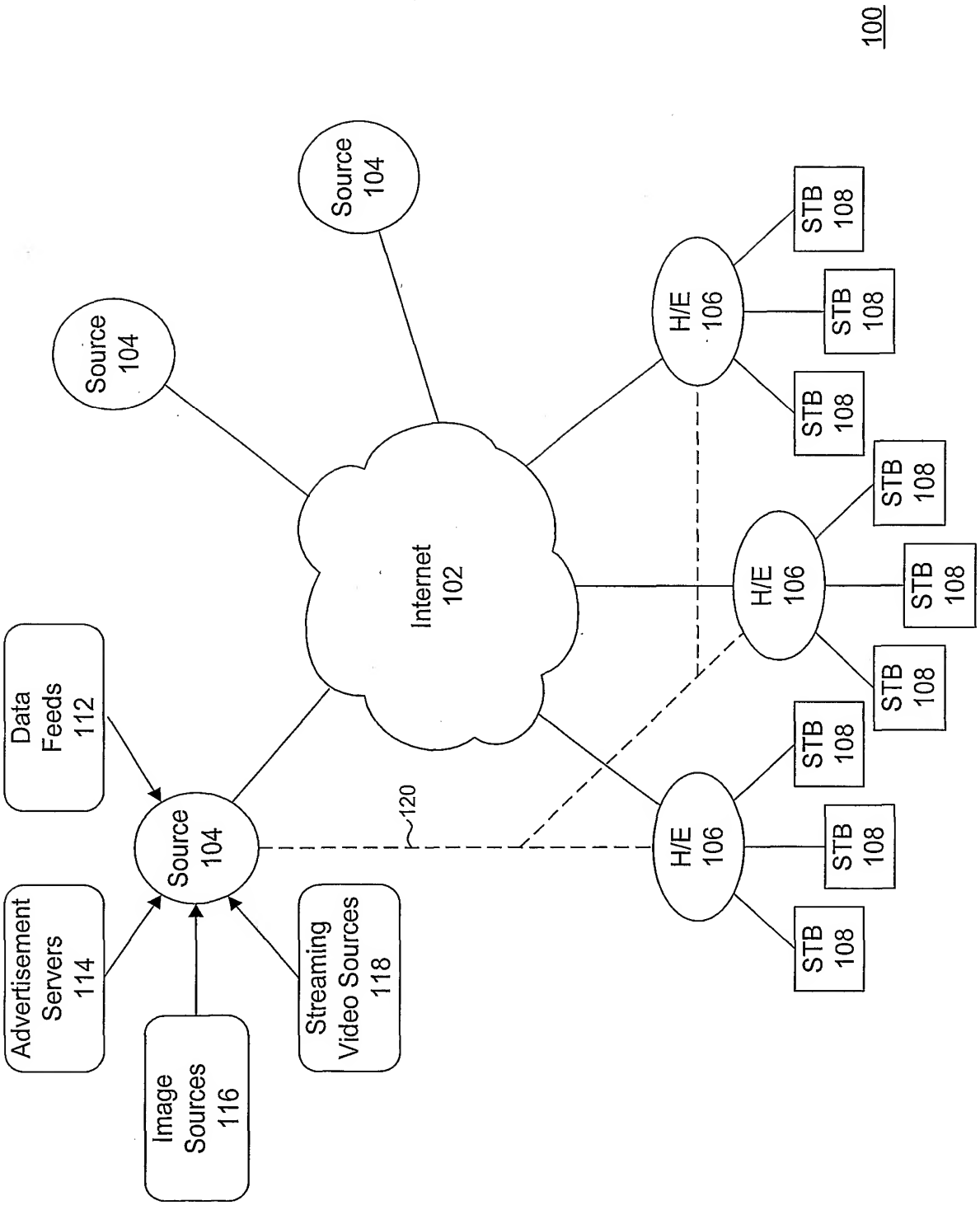

100
Source 104
Source 104
Source 104
Internet 102
Data Feeds 112
Advertisement Servers 114
Image Sources 116
Streaming Video Sources 118
120
H/E 106
H/E 106
H/E 106
STB 108
STB 108
STB 108
STB 108
STB 108
STB 108
STB 108
STB 108
STB 108
STB 108

FIG. 1

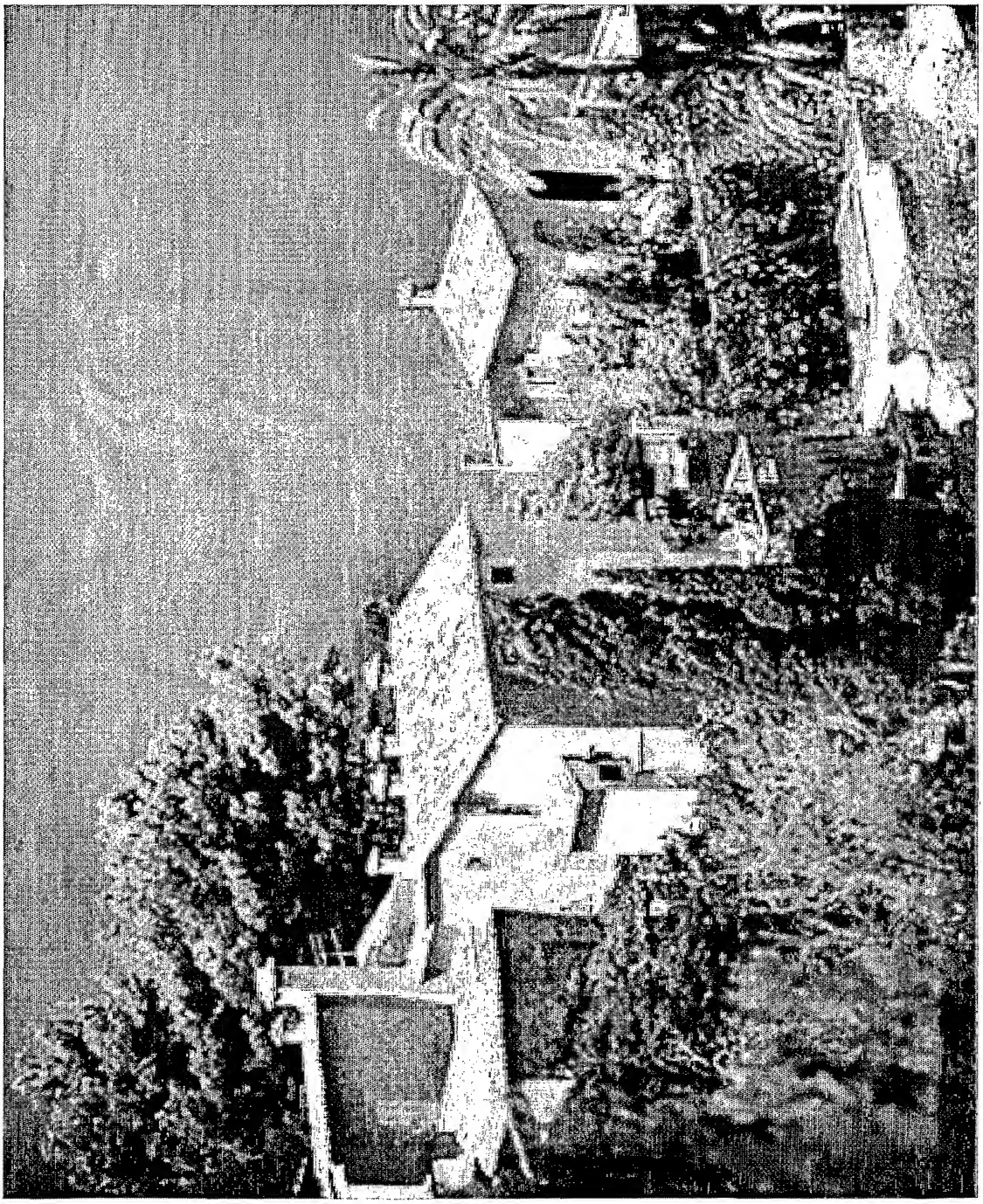


FIG. 2

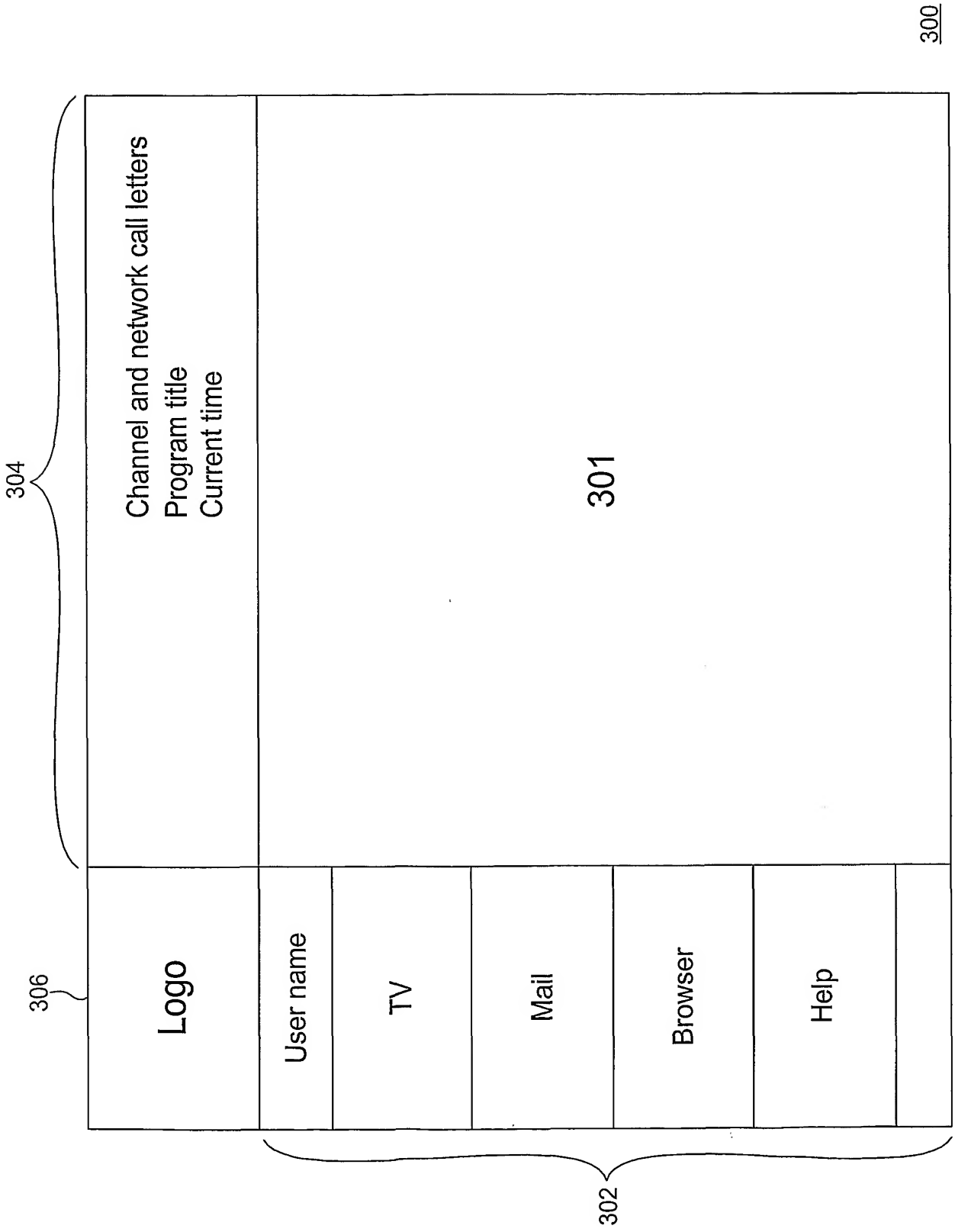

300
304
Channel and network call letters
Program title
Current time
301
306
Logo
User name
TV
Mail
Browser
Help
302

FIG. 3

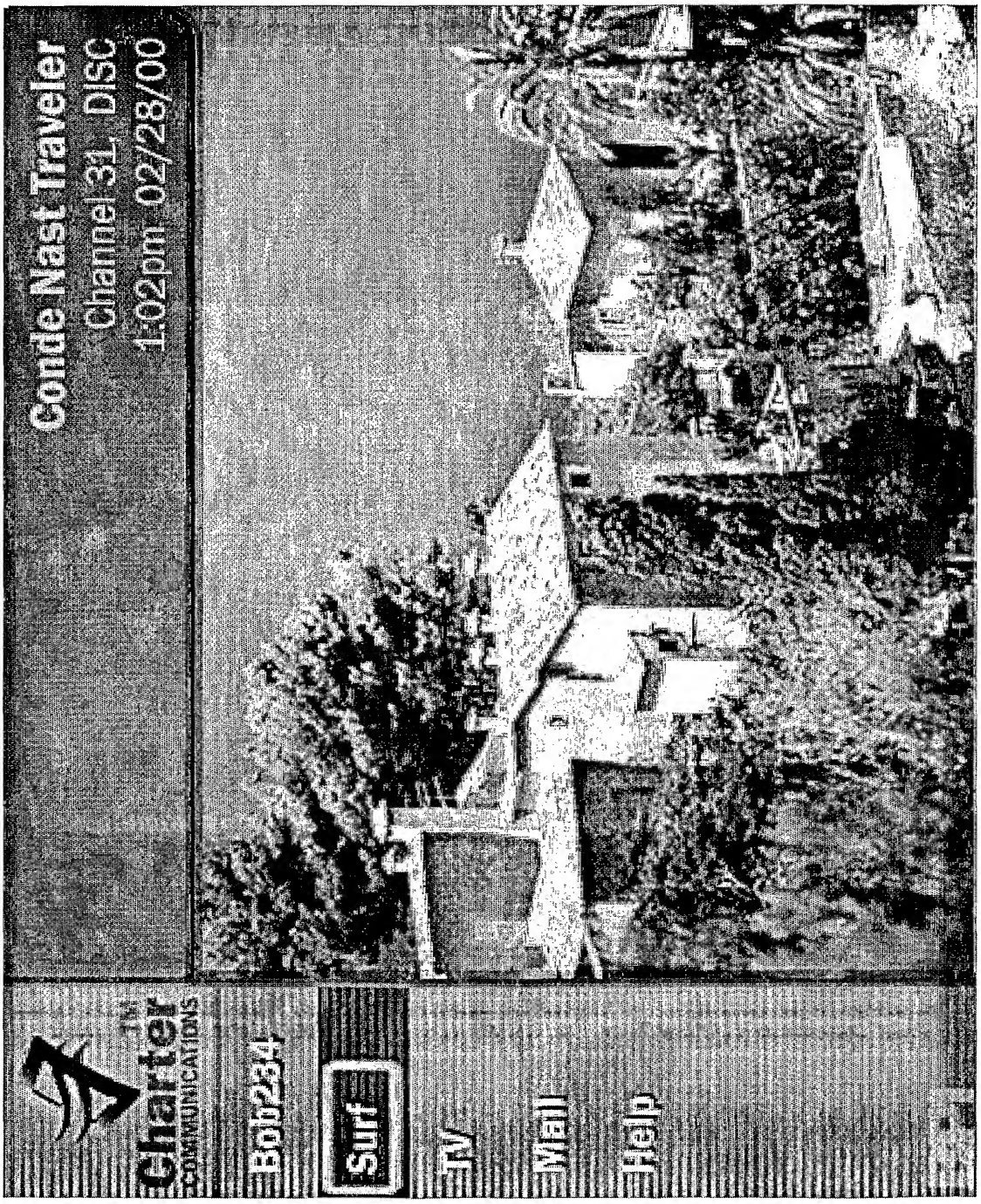

Conde Nast Traveler
Channel 31 DISC
1:02pm 02/28/00
Charter
COMMUNICATIONS
Bob234
Surf
TV
Mail
Help

FIG. 4

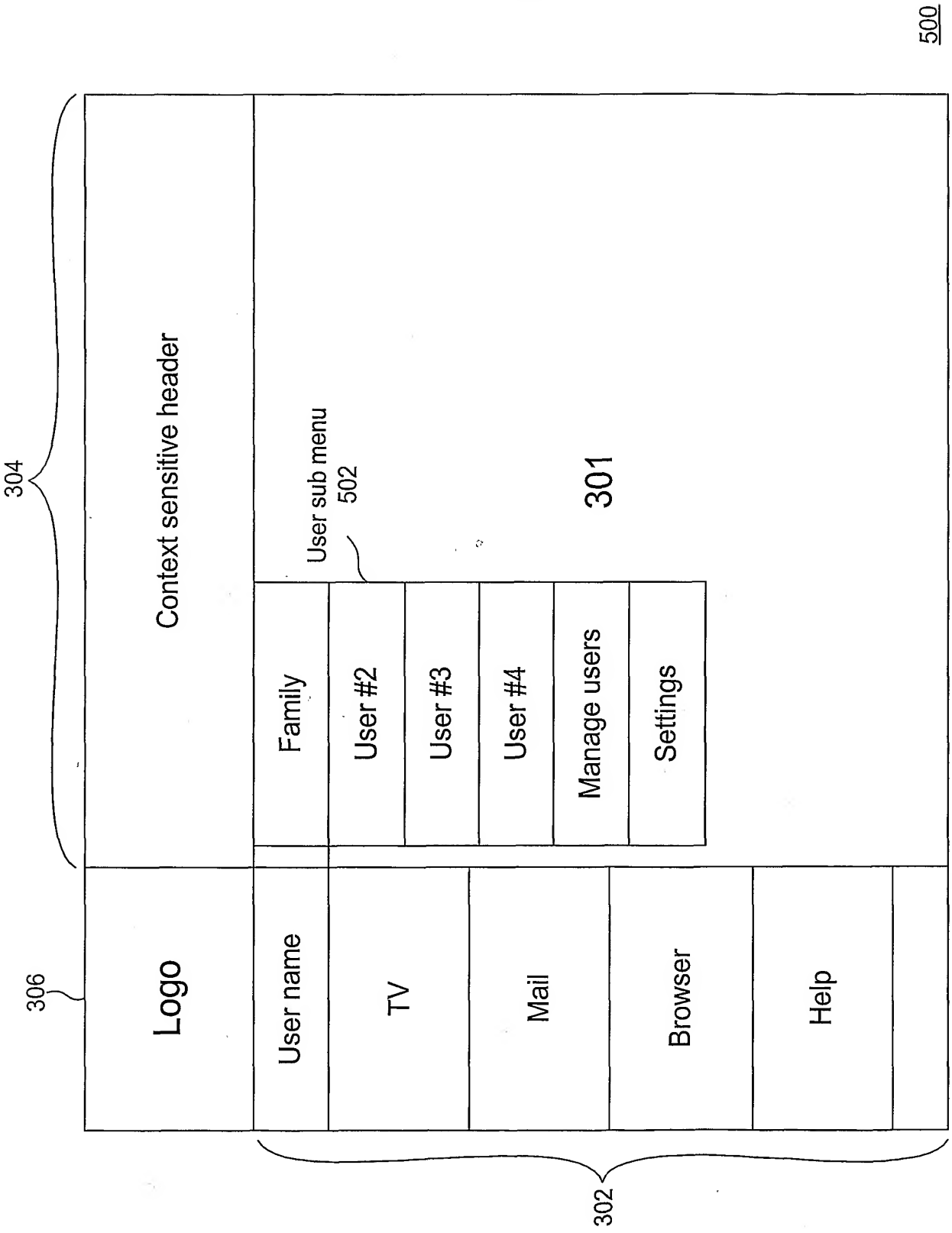

500
304
306
302
Logo
Context sensitive header
User name
TV
Mail
Browser
Help
Family
User sub menu
502
User #2
User #3
User #4
Manage users
Settings
301

FIG. 5

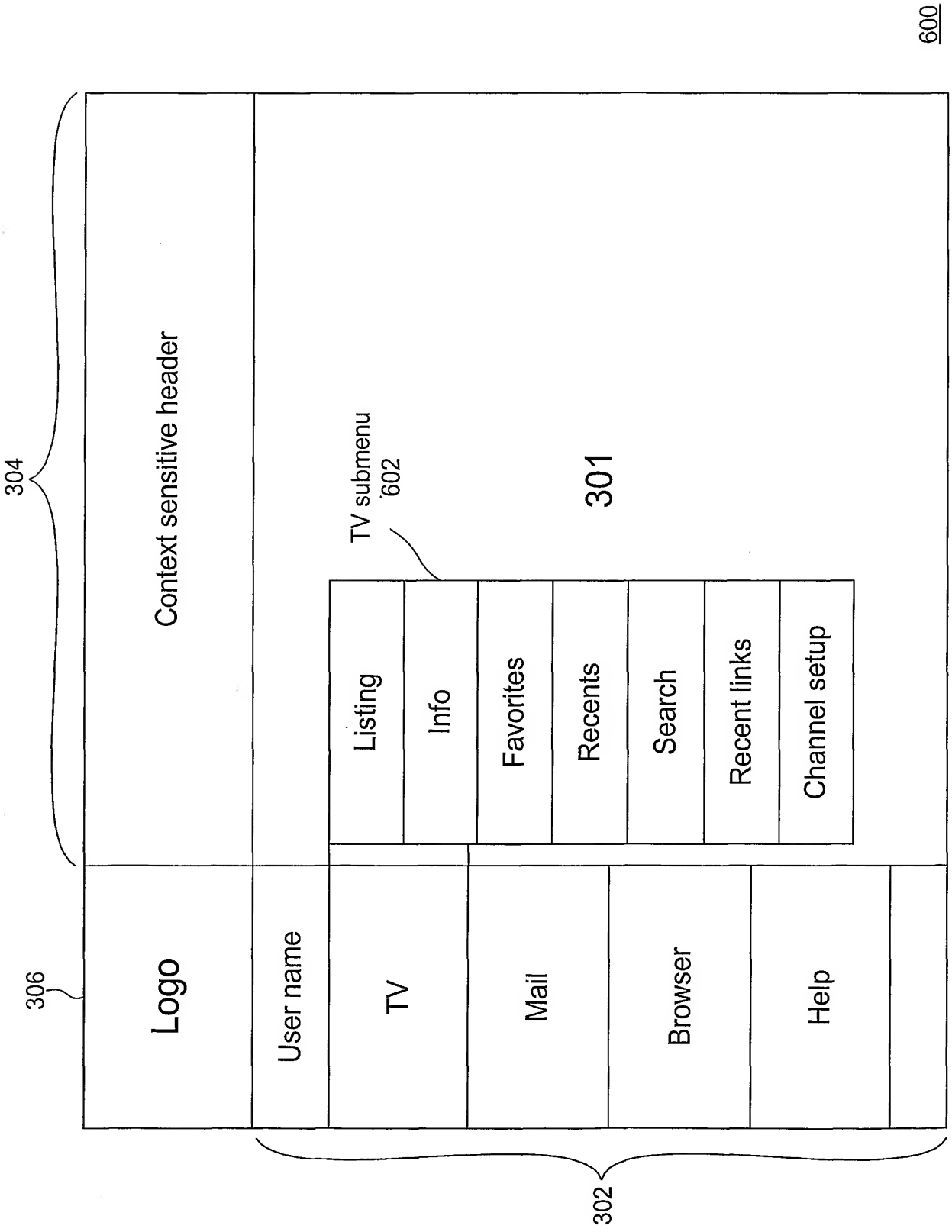

600
304
306
302
Logo
Context sensitive header
User name
TV
Mail
Browser
Help
TV submenu
602
Listing
Info
Favorites
Recents
Search
Recent links
Channel setup
301

FIG. 6

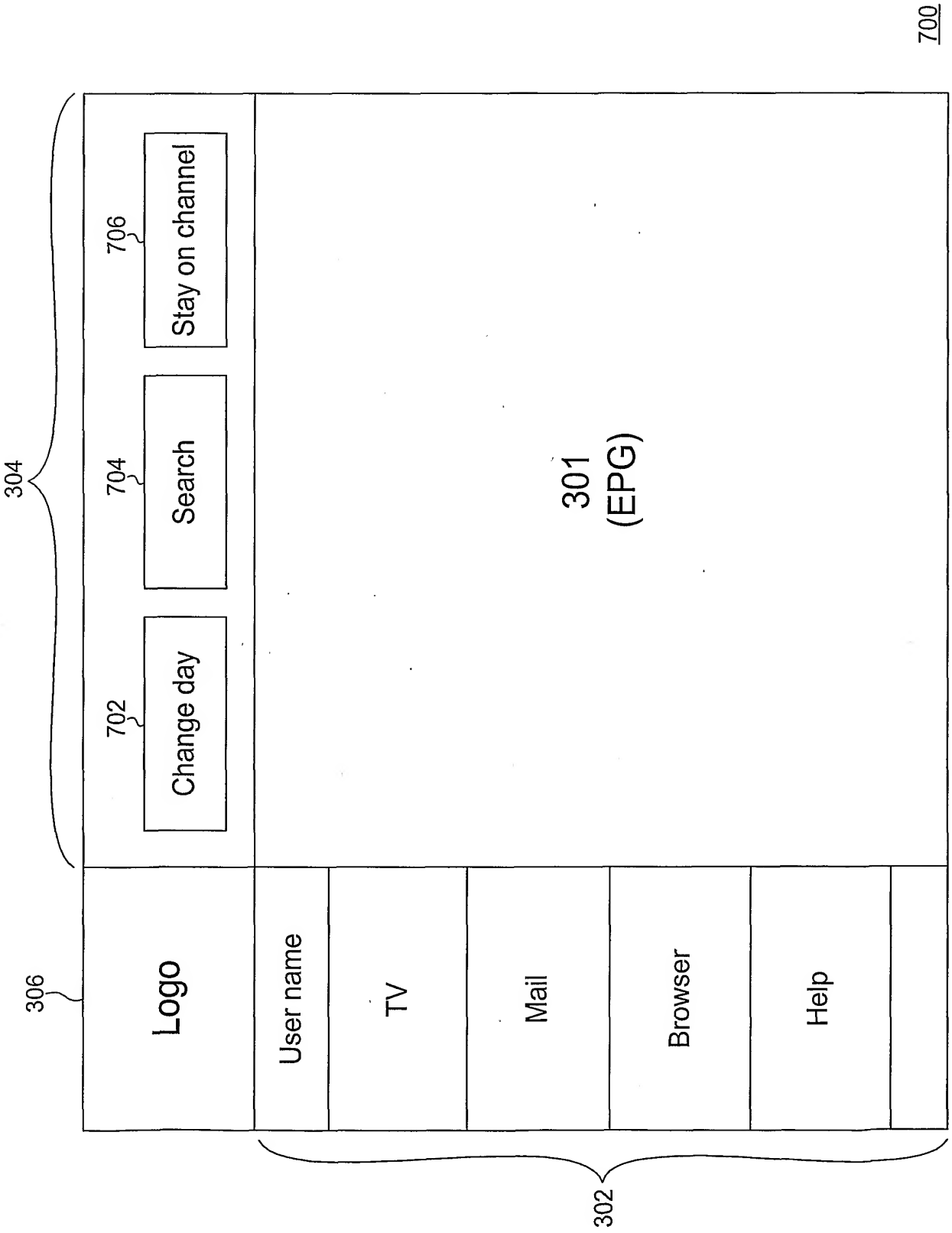

700
304
306
Logo
702
Change day
704
Search
706
Stay on channel
301
(EPG)
User name
TV
Mail
Browser
Help
302

FIG. 7

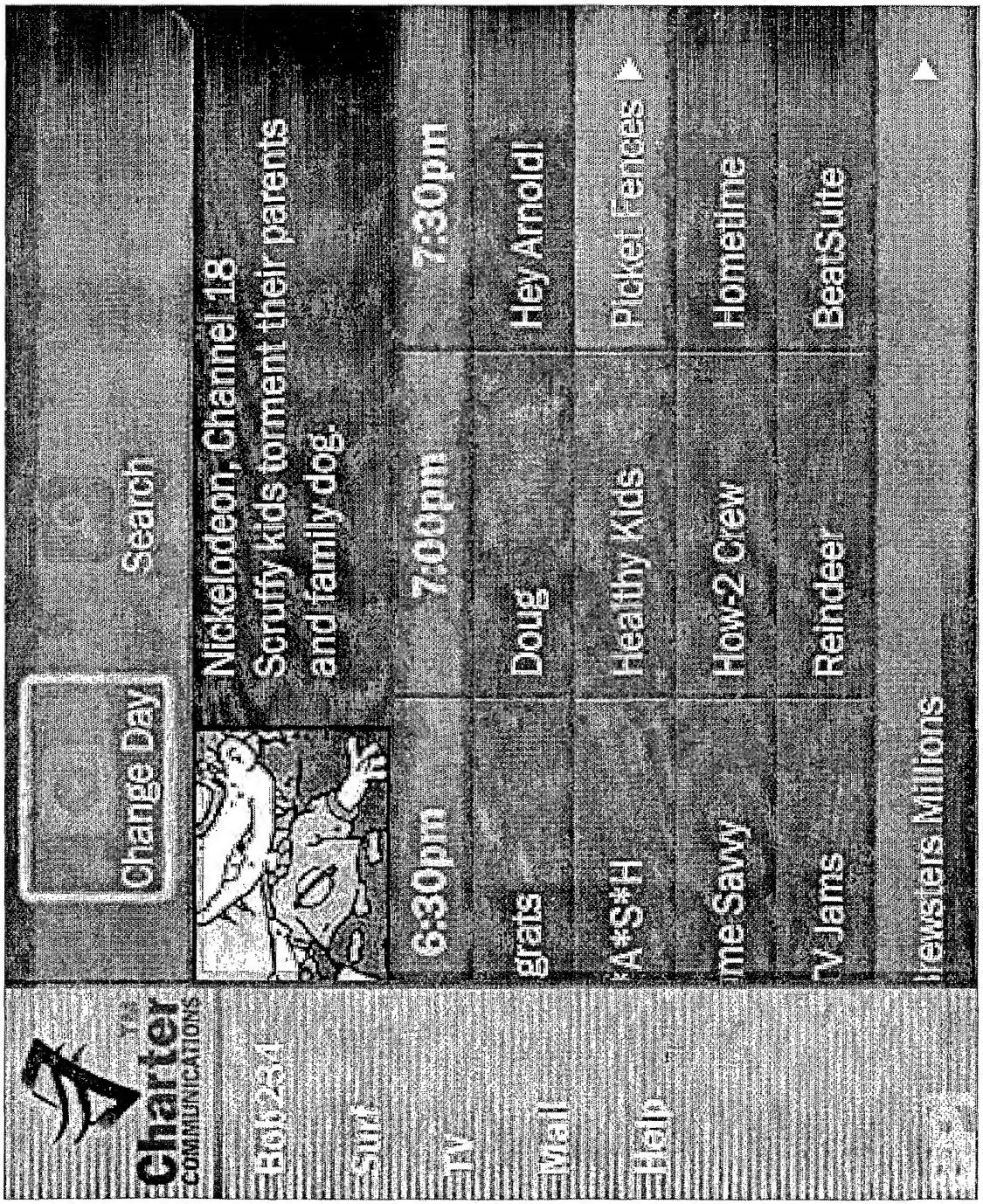

Charter
COMMUNICATIONS
Search
Change Day
Nickelodeon, Channel 18
Scruffy kids torment their parents
and family dog.
6:30pm
7:00pm
7:30pm
Doug
Hey Arnold!
Healthy Kids
Pickel Fences
How-2 Crew
Hometime
Reindeer
BeatSuite

FIG. 8

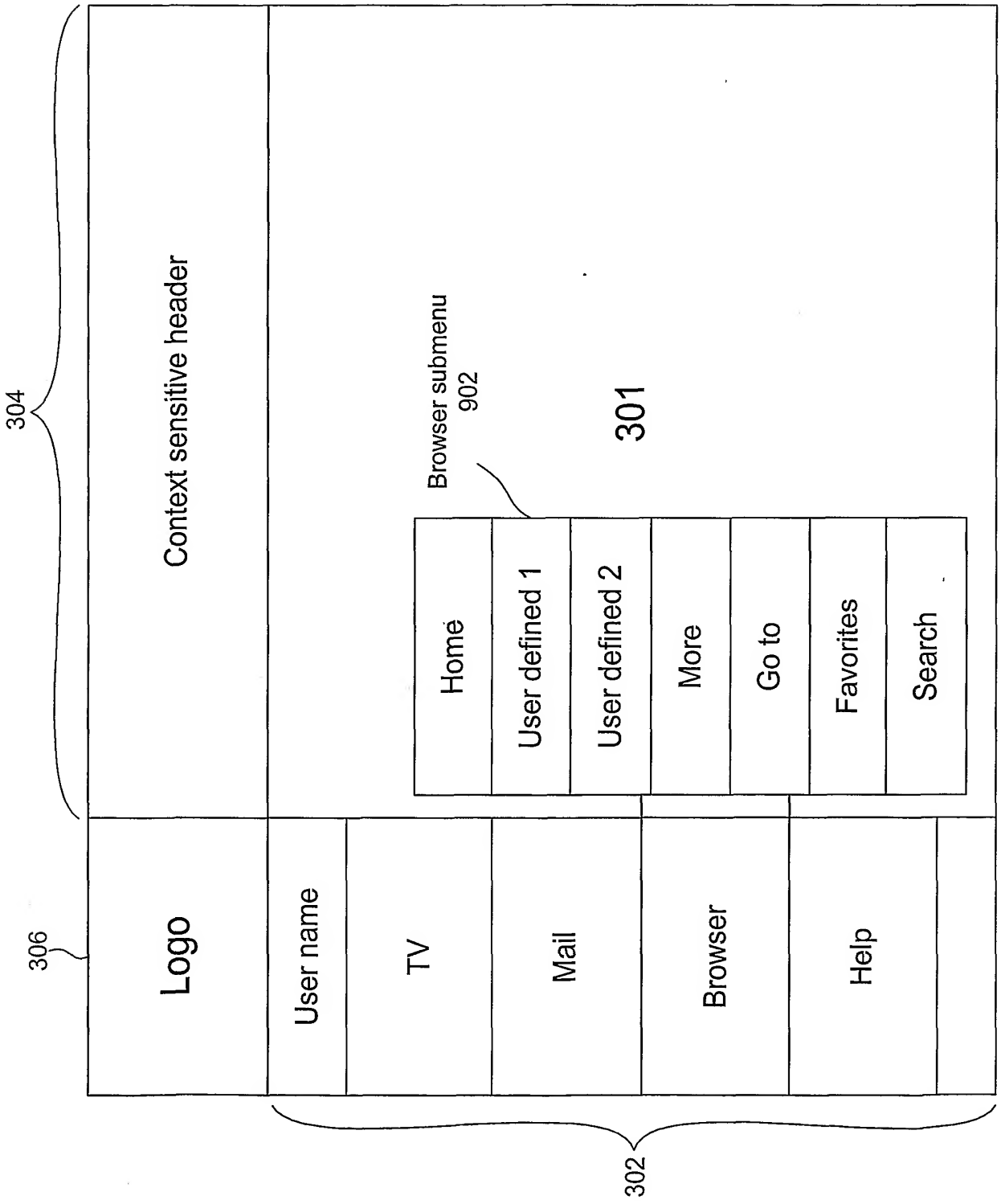

900
304
306
302
Logo
Context sensitive header
User name
TV
Mail
Browser
Help
Browser submenu
902
301
Home
User defined 1
User defined 2
More
Go to
Favorites
Search

FIG. 9

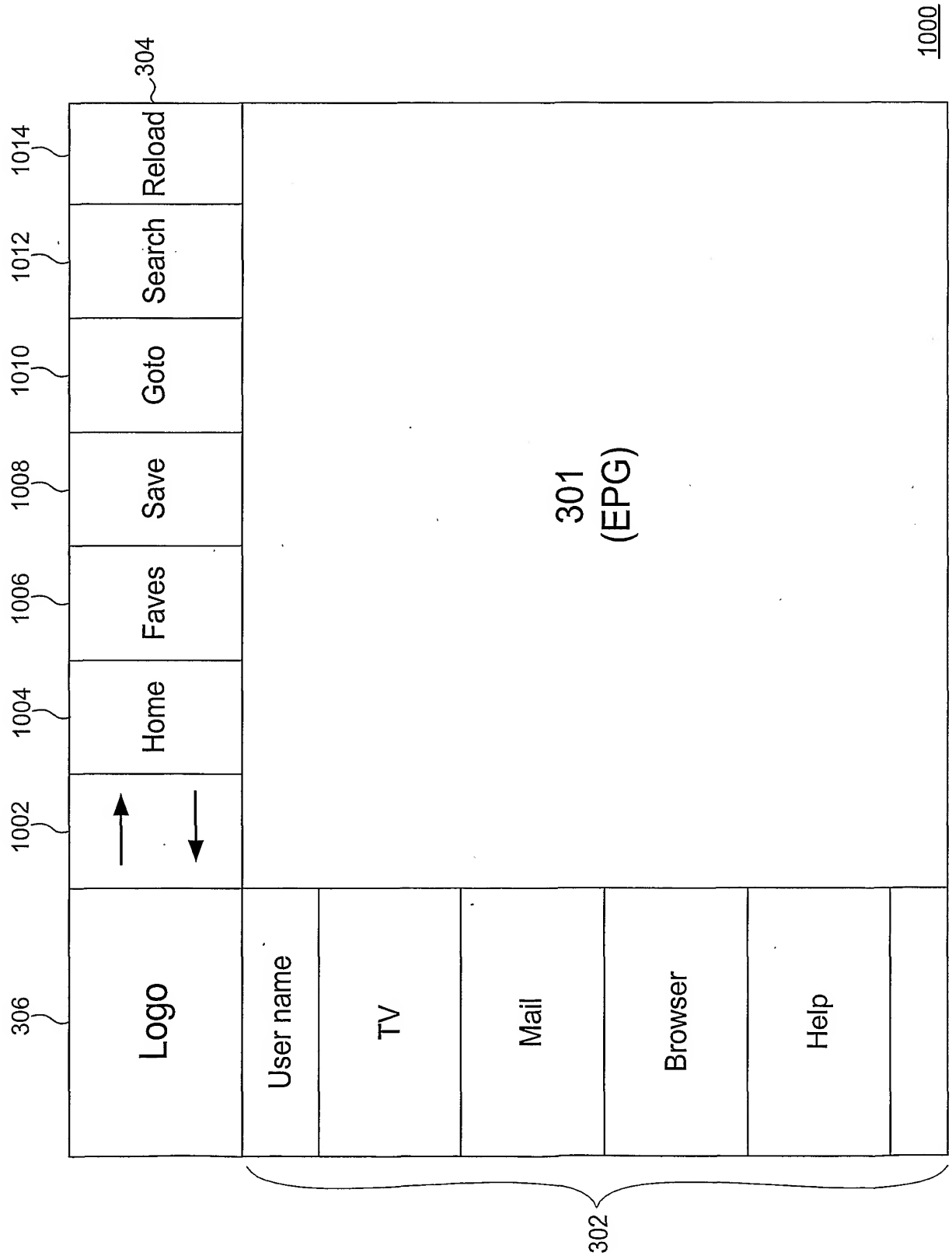

1000
304
1014
1012
1010
1008
1006
1004
1002
306
Reload
Search
Goto
Save
Faves
Home
Logo
301
(EPG)
User name
TV
Mail
Browser
Help
302

FIG. 10

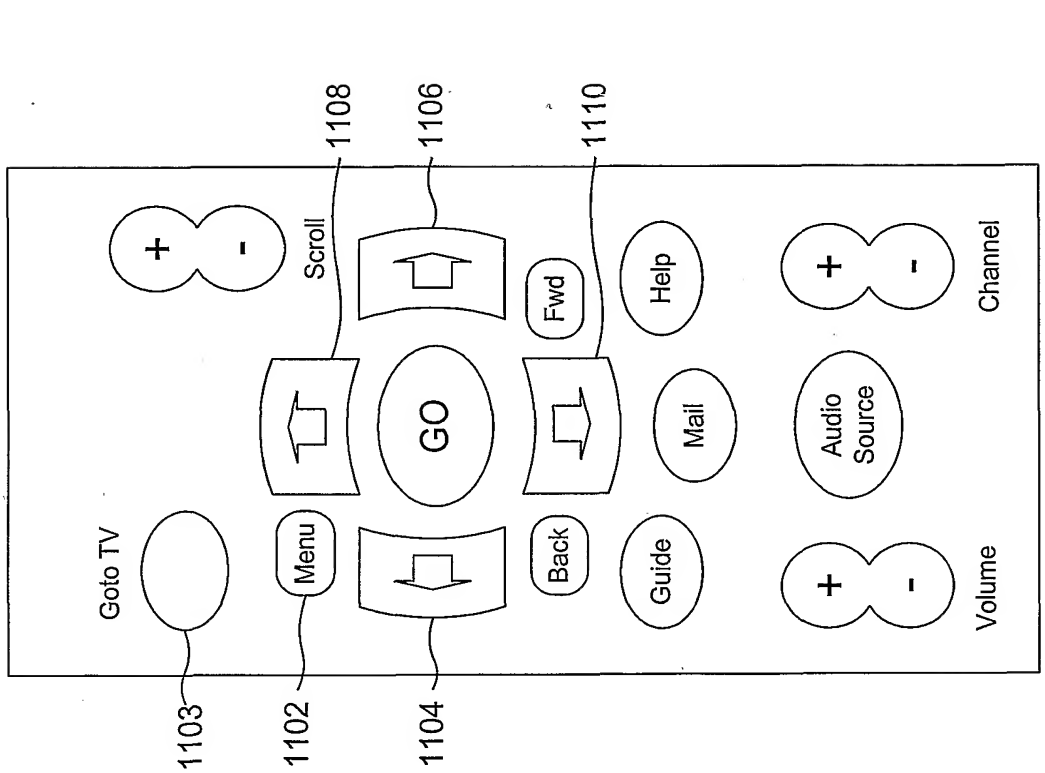

1100
1103
1102
1104
1108
1106
1110
Goto TV
Menu
Scroll
GO
Back
Fwd
Guide
Mail
Help
Audio Source
Volume
Channel
+
-

FIG. 11

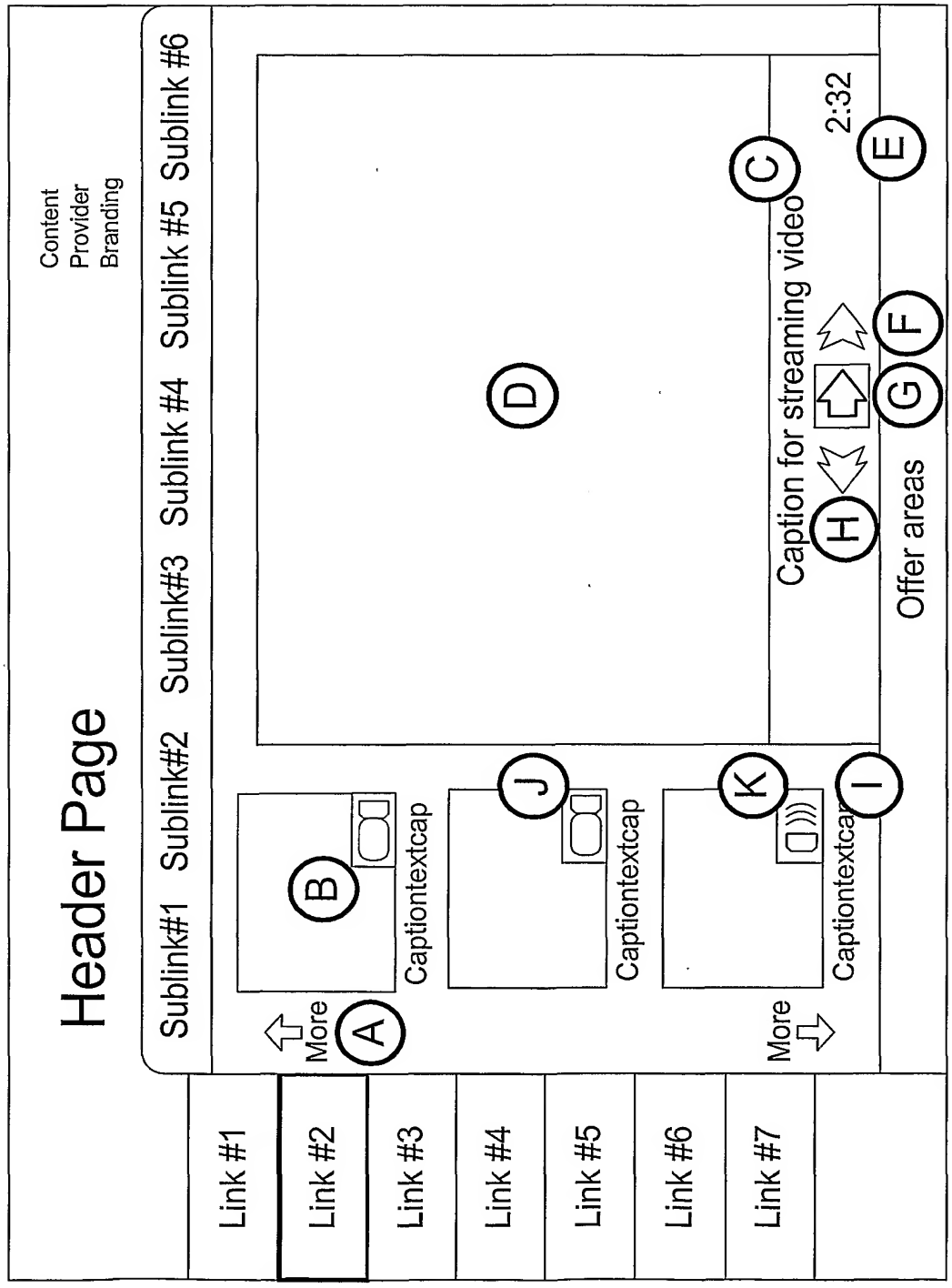

Header Page
Content Provider Branding
Sublink#1
Sublink#2
Sublink#3
Sublink #4
Sublink #5
Sublink #6
Link #1
Link #2
Link #3
Link #4
Link #5
Link #6
Link #7
More
A
B
Captiontextcap
J
Captiontextcap
K
More
Captiontextcap
I
D
C
Caption for streaming video
2:32
E
H
G
F
Offer areas

FIG. 12

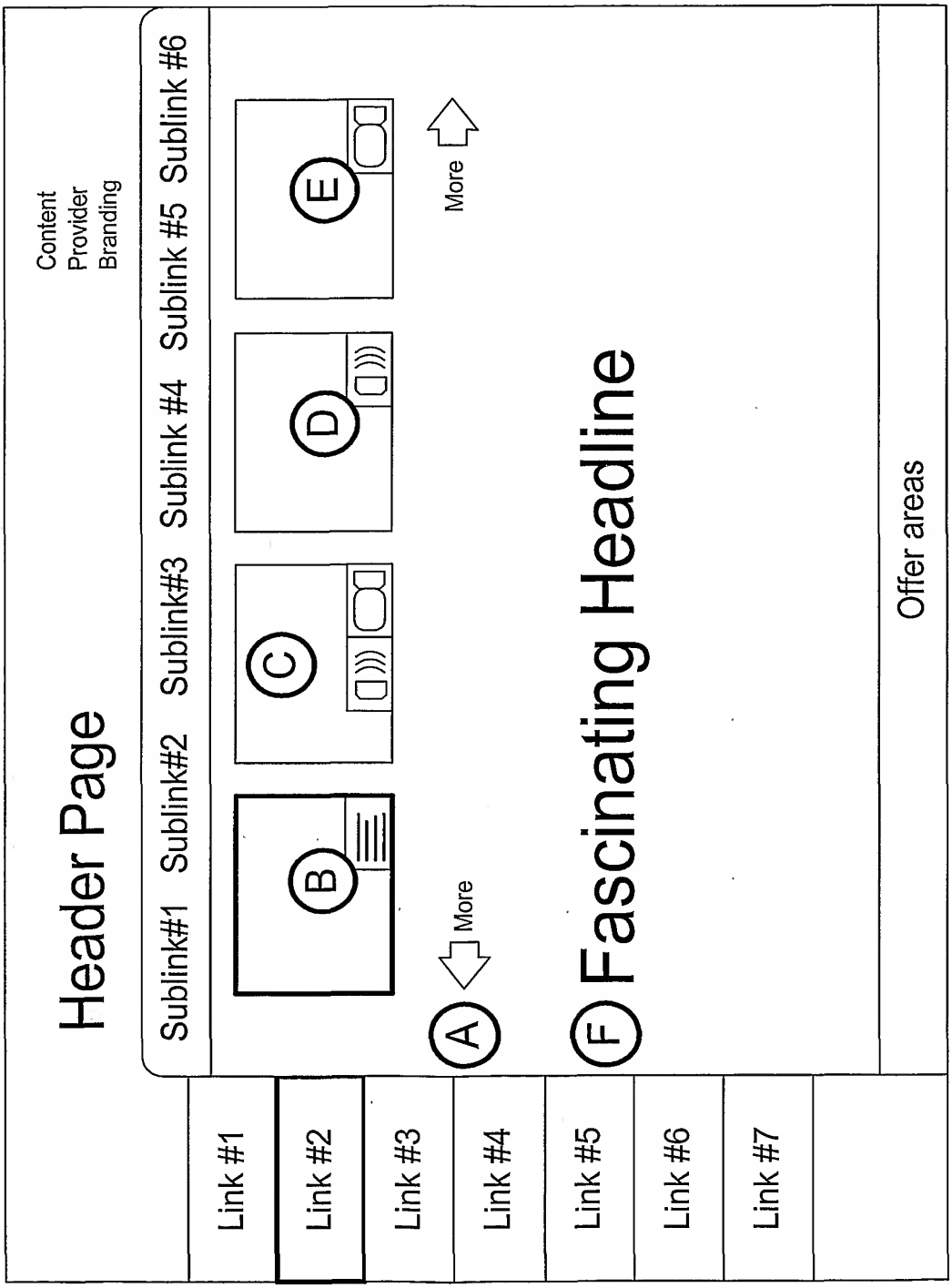

Header Page
Content Provider Branding
Sublink#1
Sublink#2
Sublink#3
Sublink #4
Sublink #5
Sublink #6
Link #1
Link #2
Link #3
Link #4
Link #5
Link #6
Link #7
A
More
B
C
D
E
More
F Fascinating Headline
Offer areas

FIG. 13

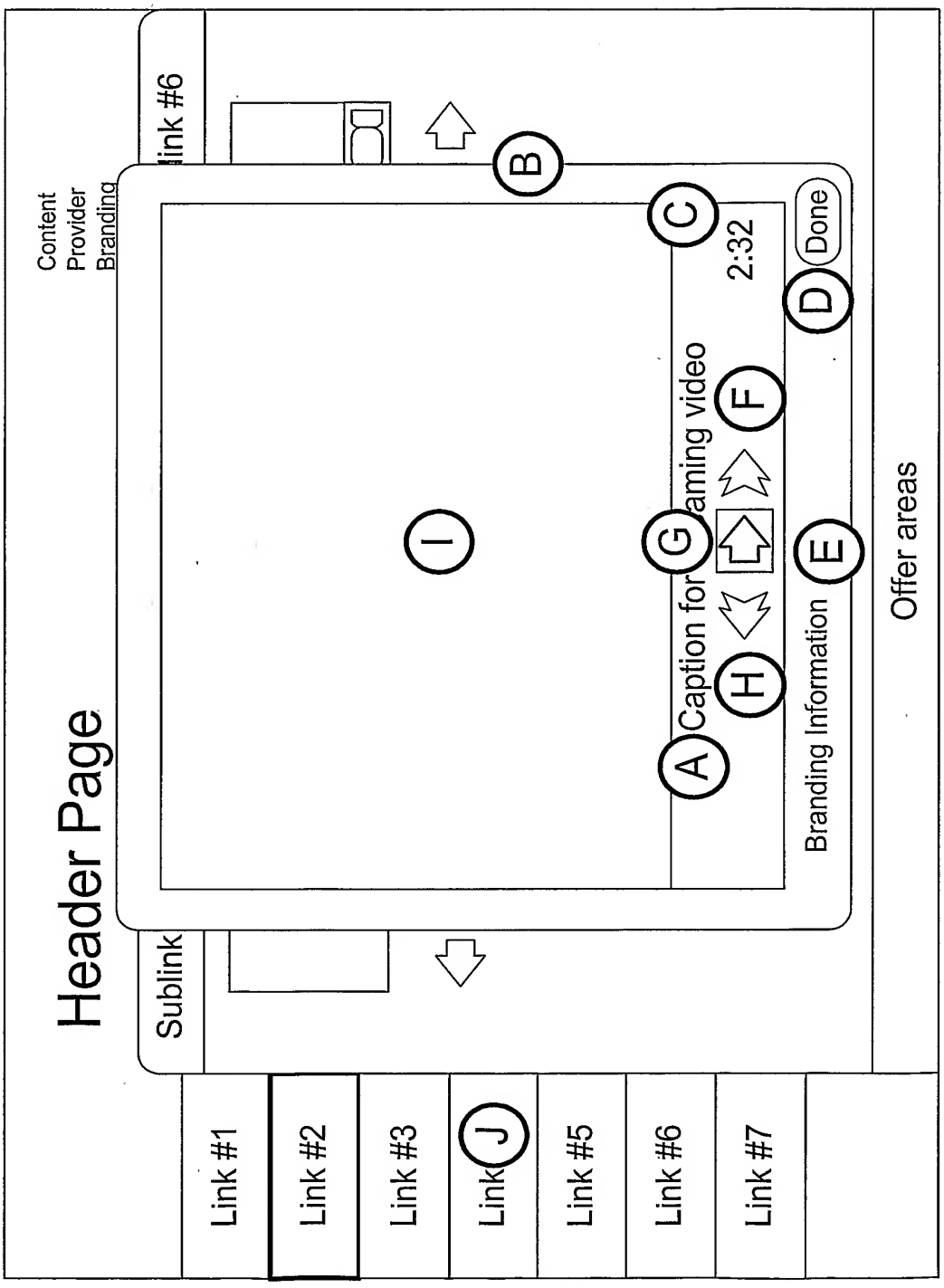

Header Page
Content Provider Branding
Link #6
Sublink
Link #1
Link #2
Link #3
Link #5
Link #6
Link #7
Offer areas
Caption for
aming video
2:32
Done
Branding Information
A
B
C
D
E
F
G
H
I
J

FIG. 14

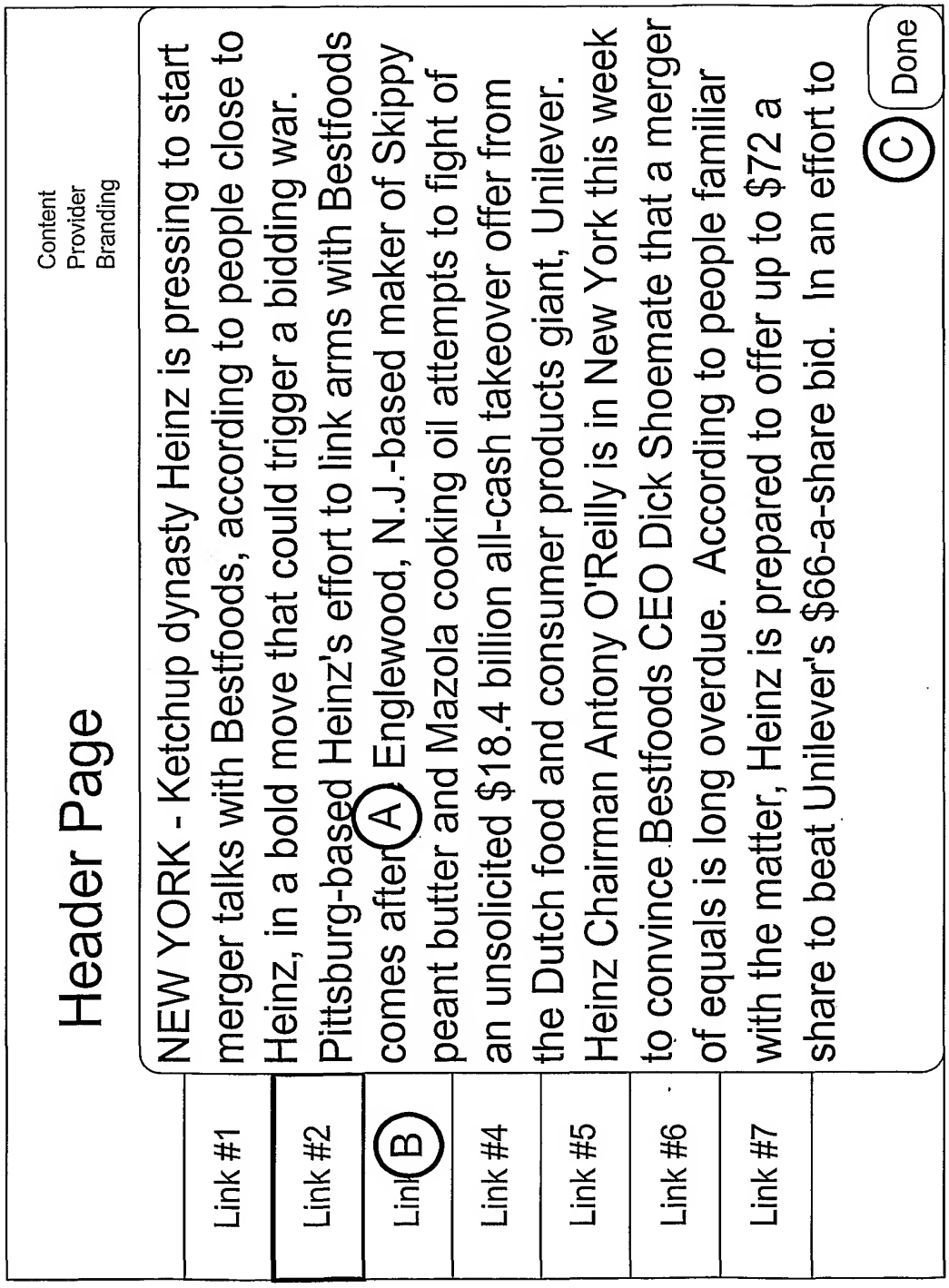

Header Page
Content
Provider
Branding
Link #1
Link #2
Link (B)
Link #4
Link #5
Link #6
Link #7
NEW YORK - Ketchup dynasty Heinz is pressing to start merger talks with Bestfoods, according to people close to Heinz, in a bold move that could trigger a bidding war. Pittsburg-based Heinz's effort to link arms with Bestfoods comes after (A) Englewood, N.J.-based maker of Skippy peant butter and Mazola cooking oil attempts to fight of an unsolicited $18.4 billion all-cash takeover offer from the Dutch food and consumer products giant, Unilever. Heinz Chairman Antony O'Reilly is in New York this week to convince Bestfoods CEO Dick Shoemate that a merger of equals is long overdue. According to people familiar with the matter, Heinz is prepared to offer up to $72 a share to beat Unilever's $66-a-share bid. In an effort to
(C) Done

FIG. 15

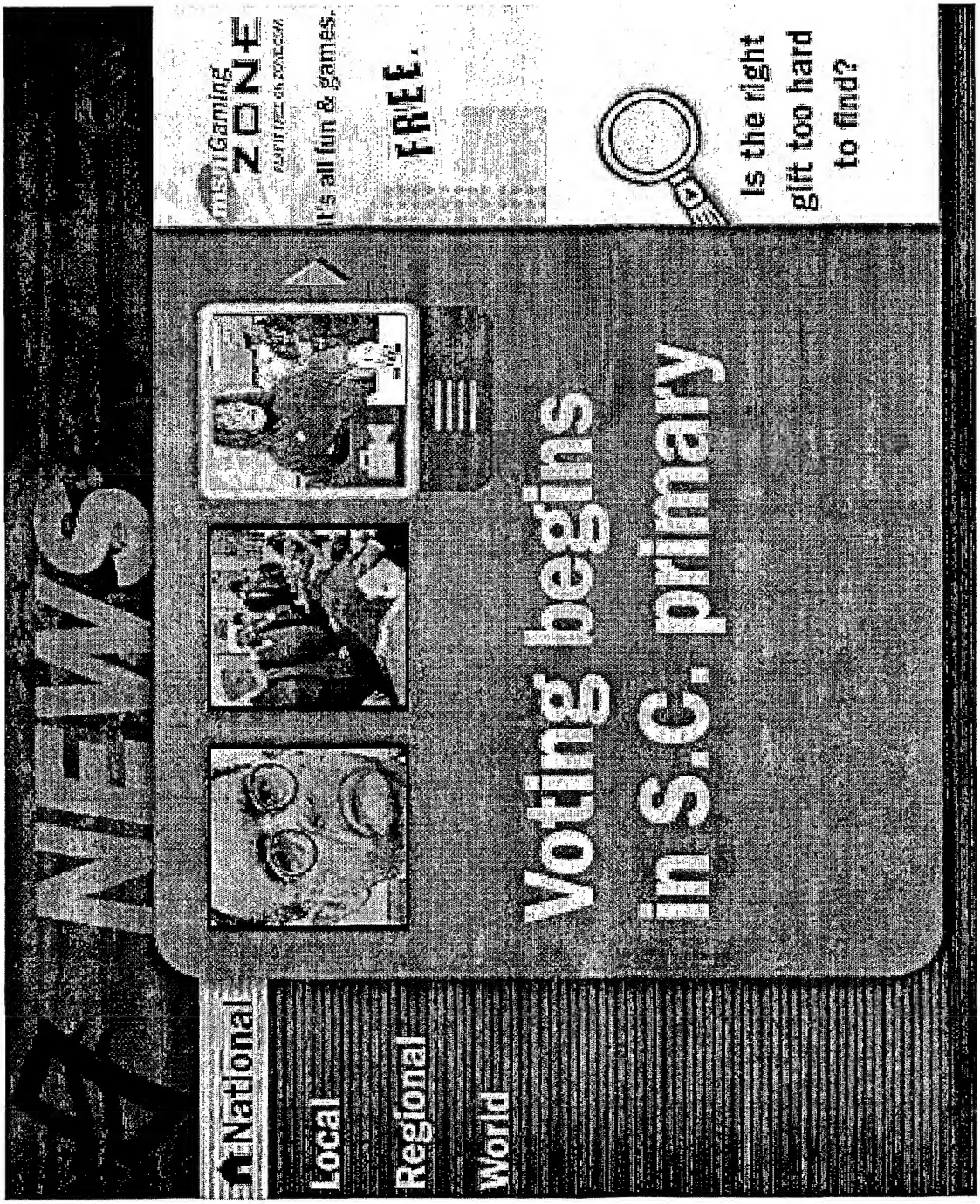

NEWS
National
Local
Regional
World
Voting begins in S.C. primary
Is the right gift too hard to find?
FREE.
ZONE

FIG. 16

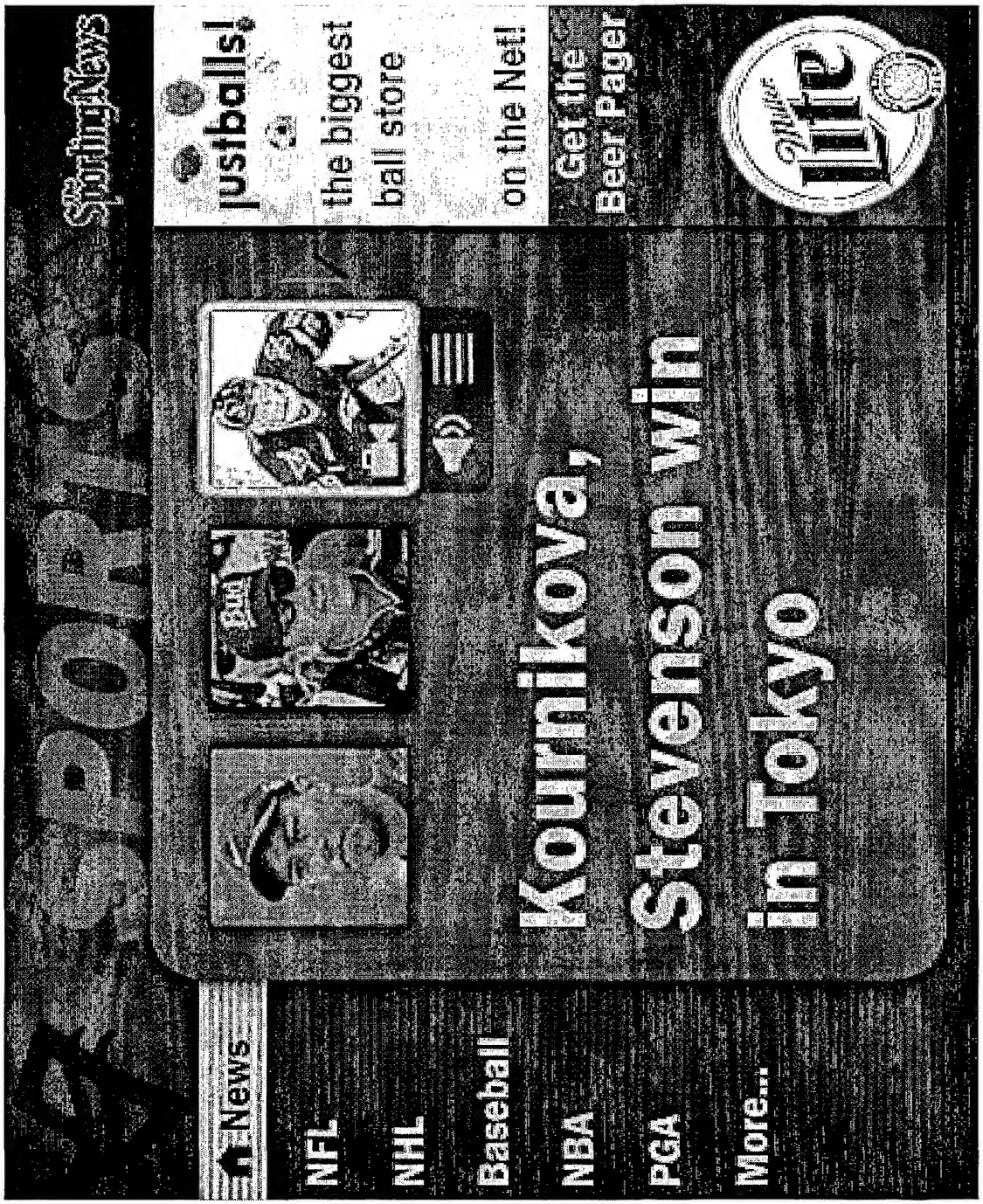

SportingNews
News
NFL
NHL
Baseball
NBA
PGA
More...
Kournikova,
Stevenson win
in Tokyo
!ustballs!
the biggest
ball store
on the Net!
Get the
Beer Pager
Miller
Lite

FIG. 17

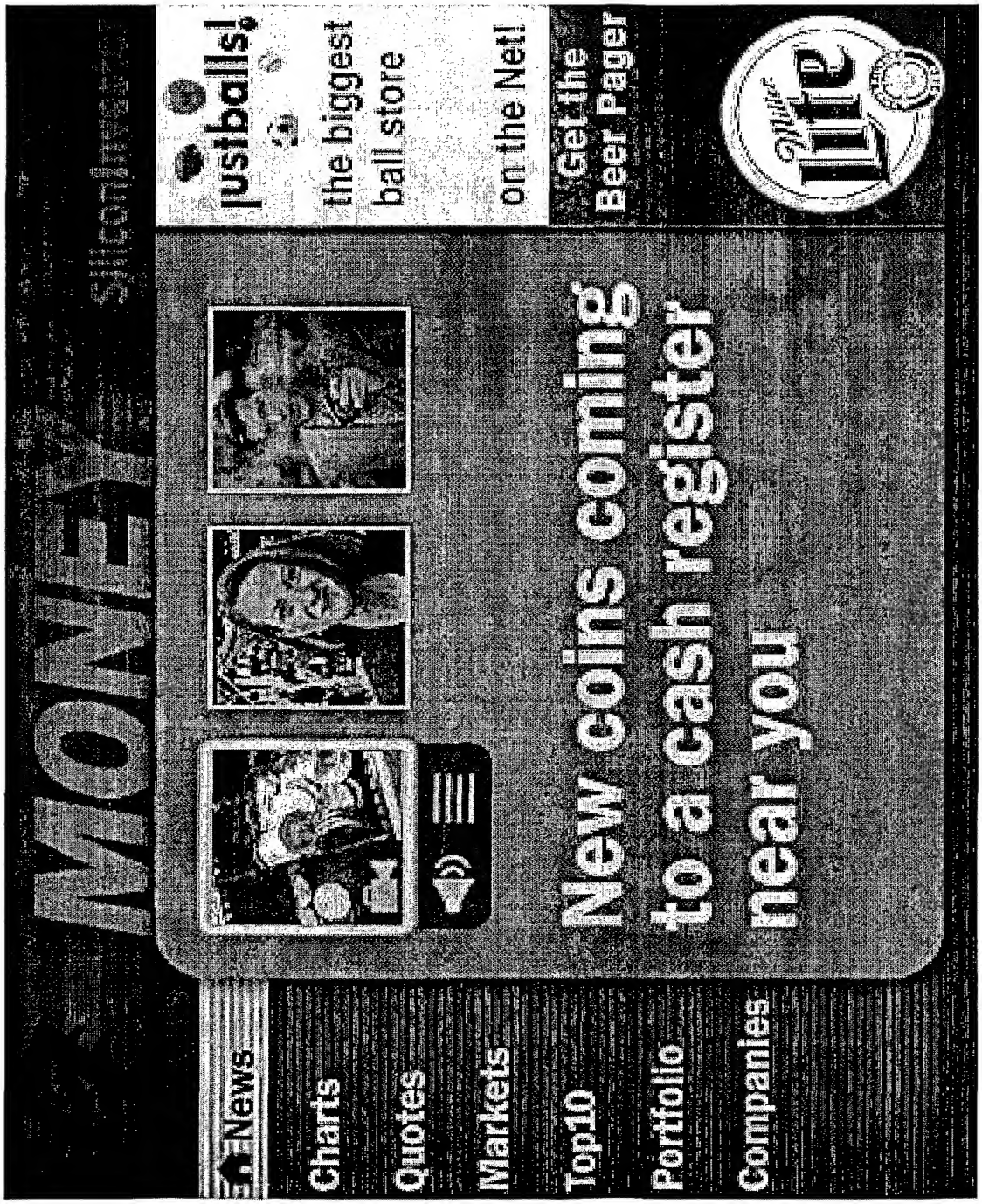

MONEY
Silicon
News
Charts
Quotes
Markets
Top10
Portfolio
Companies
New coins coming
to a cash register
near you
!ustballs!
the biggest
ball store
on the Net!
Get the
Beer Pager
Miller Lite

FIG. 18

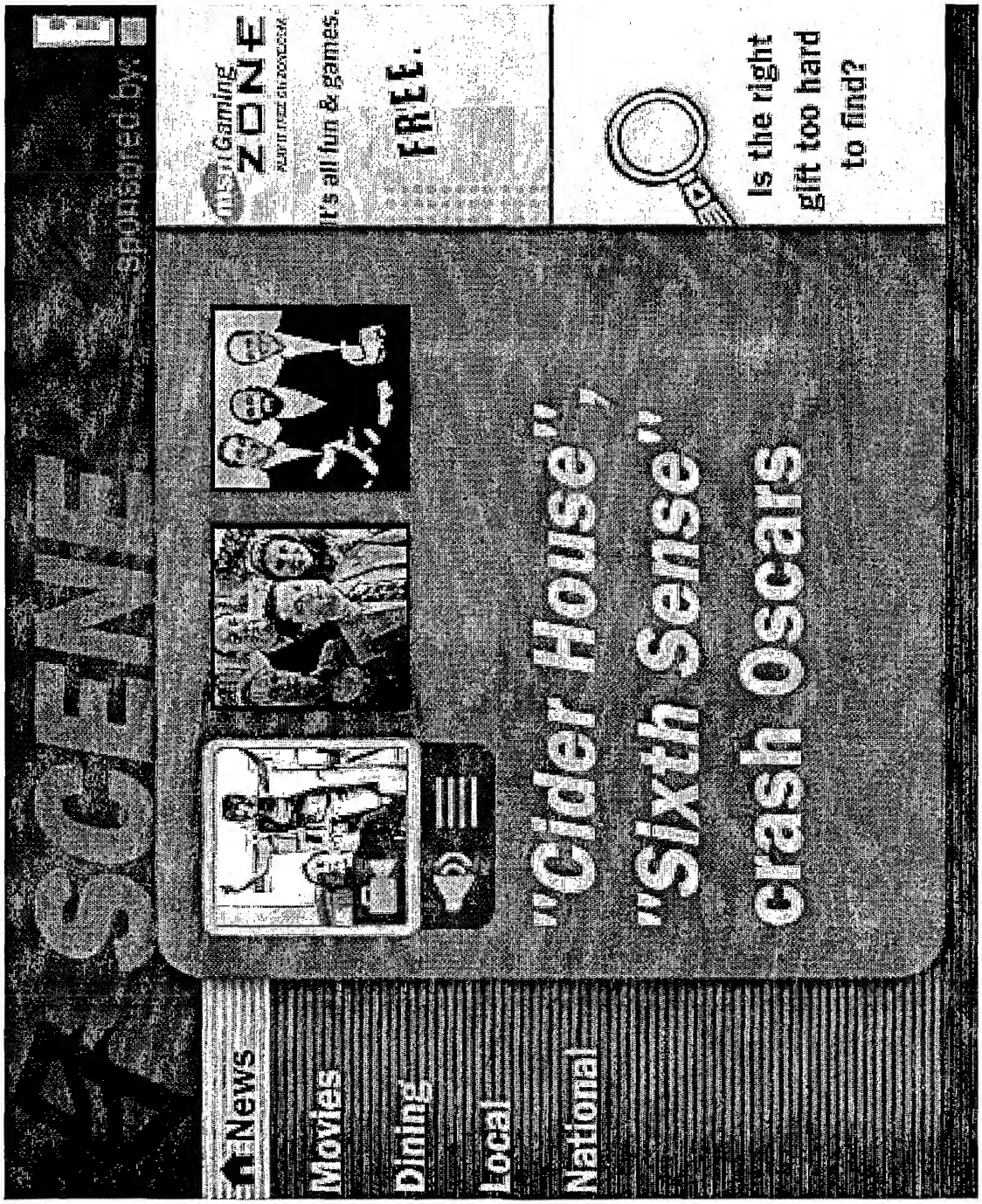

sponsored by:
News
Movies
Dining
Local
National
"Cider House"
"Sixth Sense"
crash Oscars
Is the right gift too hard to find?
FREE.
Gaming ZONE
It's all fun & games.

FIG. 19

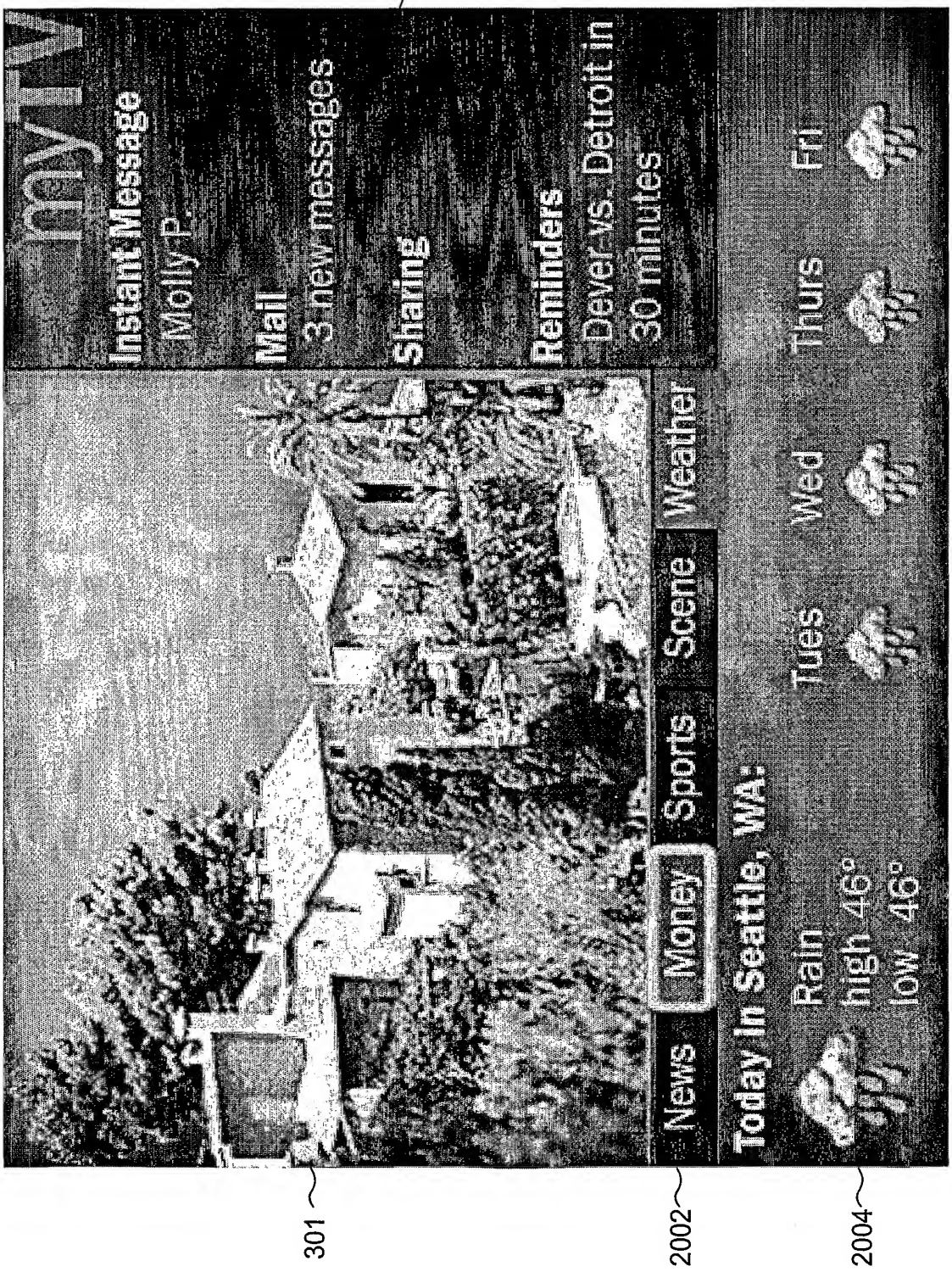

2006
nytv
Instant Message
Molly-P
Mail
3 new messages
Sharing
Reminders
Dever vs. Detroit in
30 minutes
News
Money
Sports
Scene
Weather
Today In Seattle, WA:
Rain
high 46°
low 46°
Tues
Wed
Thurs
Fri
301
2002
2004

FIG. 20

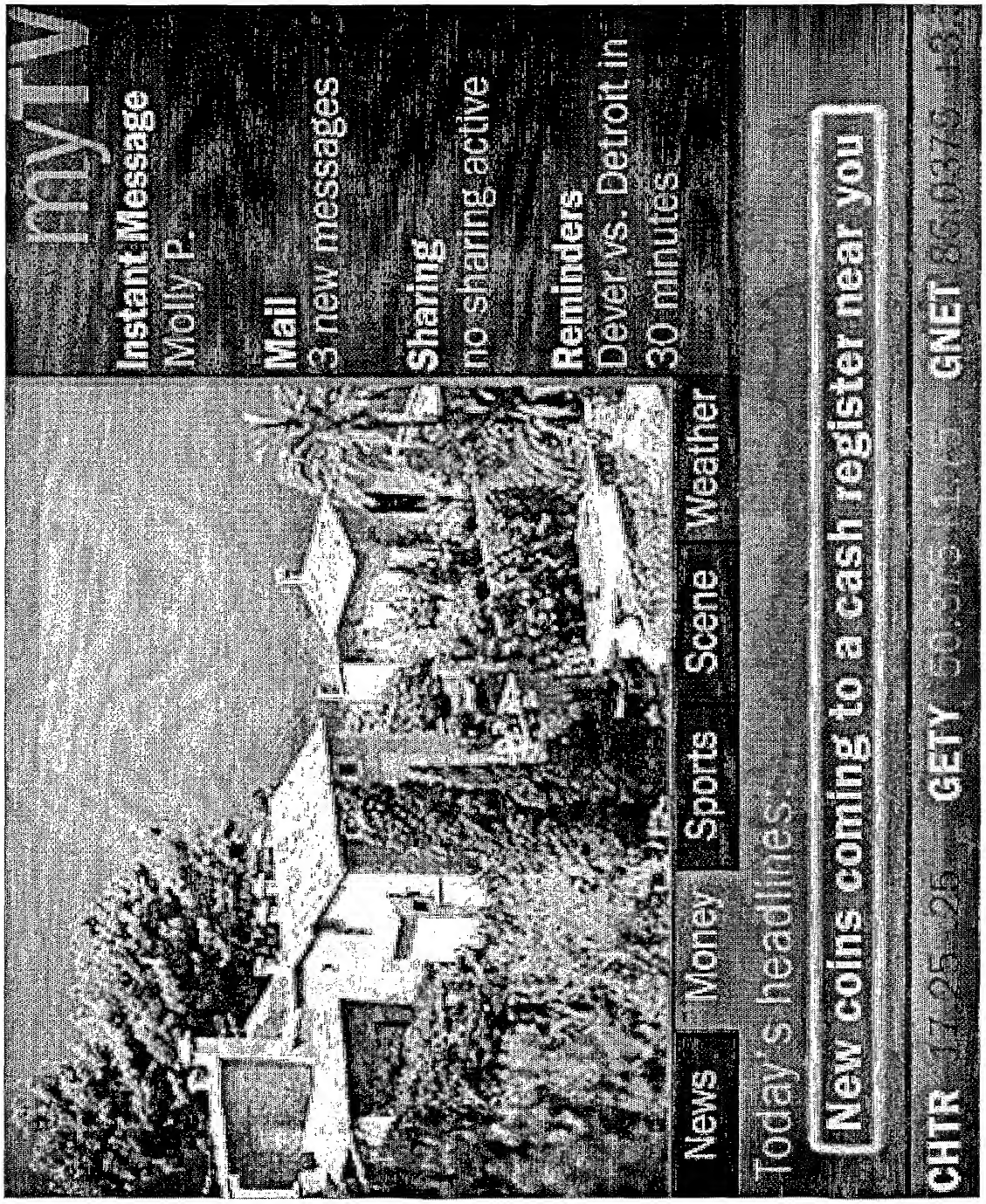

Instant Message
Molly P.
Mail
3 new messages
Sharing
no sharing active
Reminders
Dever vs. Detroit in
30 minutes
News
Money
Sports
Scene
Weather
Today's headlines:
New coins coming to a cash register near you
CHTR
GETY
GNET

FIG. 21

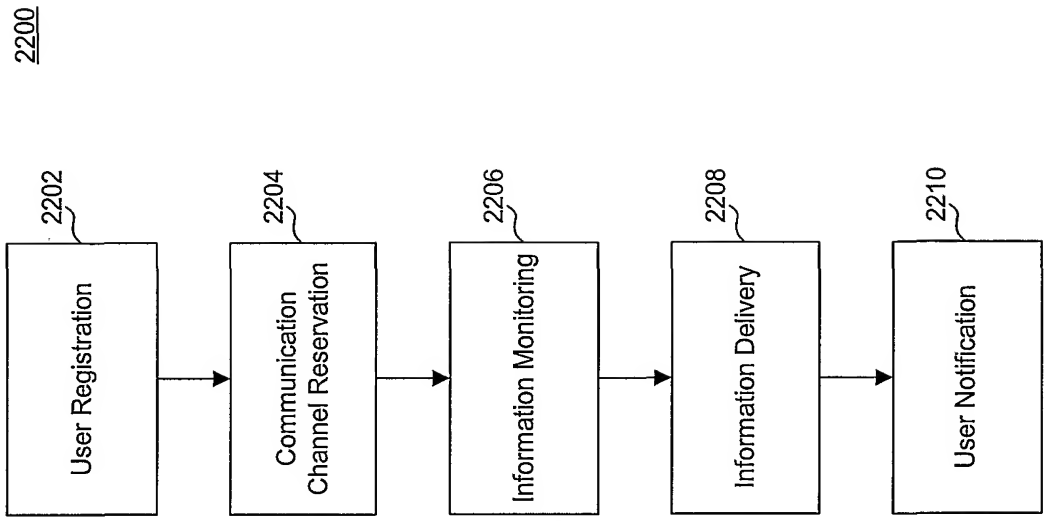

2200
2202
User Registration
2204
Communication Channel Reservation
2206
Information Monitoring
2208
Information Delivery
2210
User Notification

FIG. 22

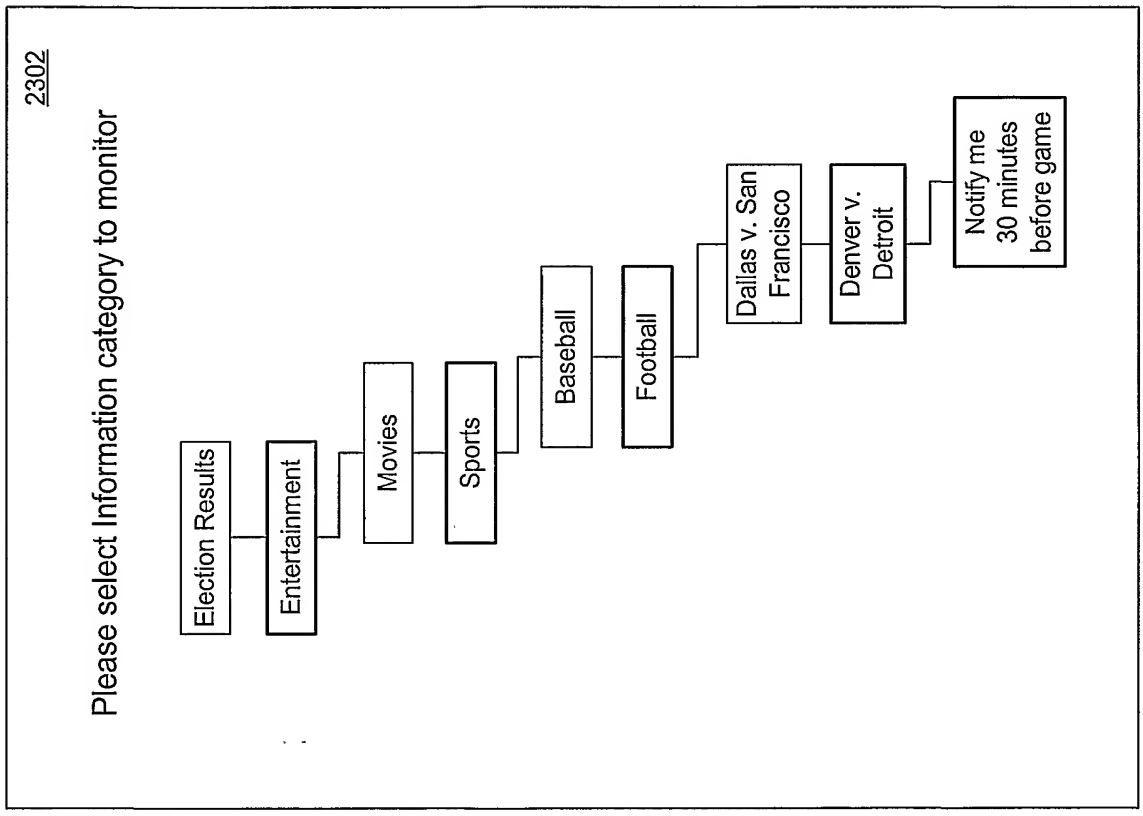

2302
Please select Information category to monitor
Election Results
Entertainment
Movies
Sports
Baseball
Football
Dallas v. San Francisco
Denver v. Detroit
Notify me 30 minutes before game

FIG. 23

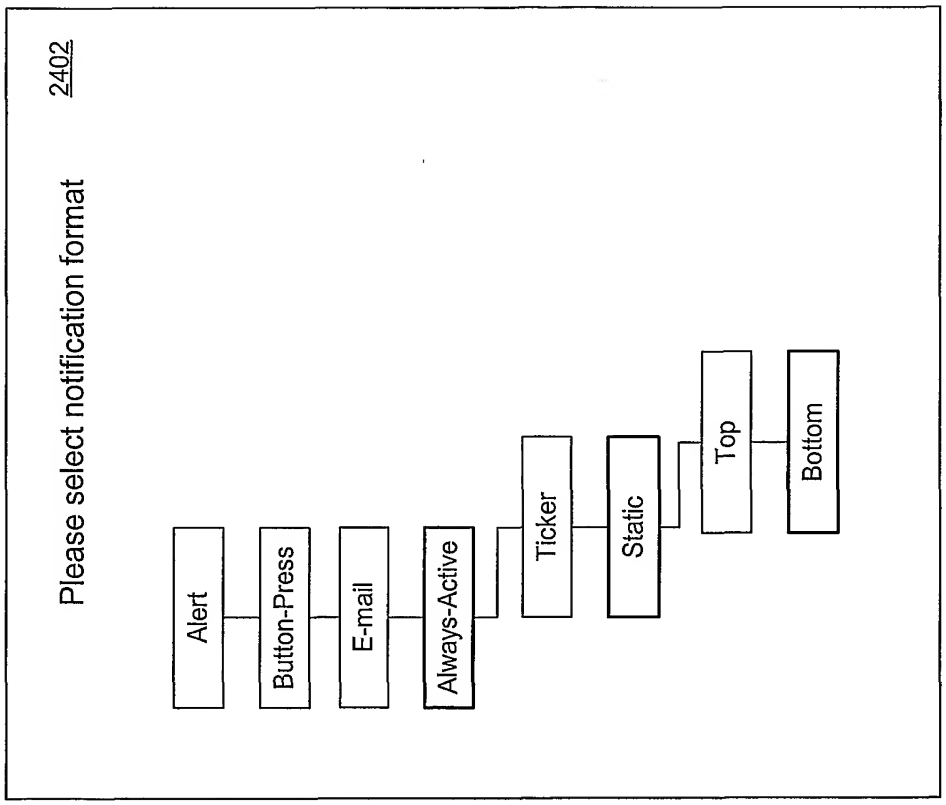

Please select notification format
2402
Alert
Button-Press
E-mail
Always-Active
Ticker
Static
Top
Bottom

FIG. 24

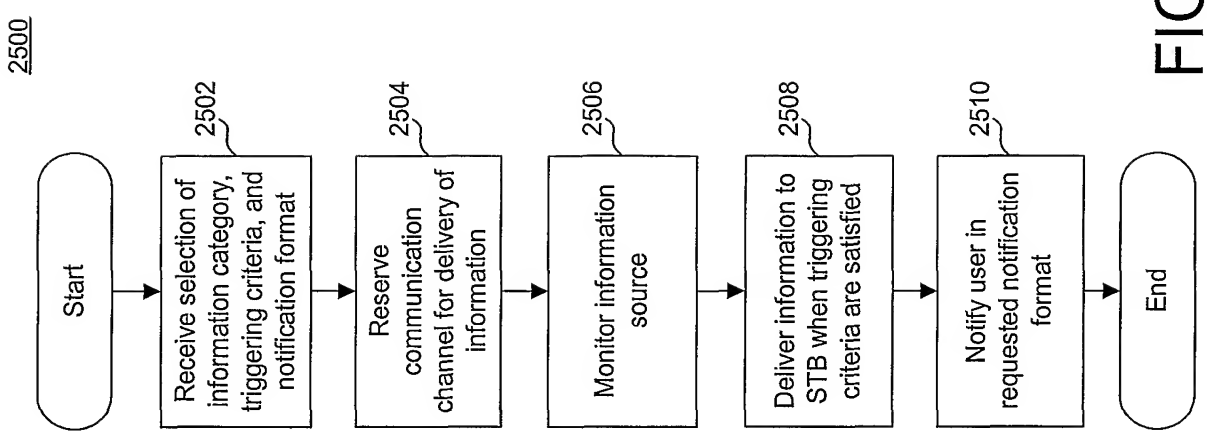

2500
Start
2502
Receive selection of information category, triggering criteria, and notification format
2504
Reserve communication channel for delivery of information
2506
Monitor information source
2508
Deliver information to STB when triggering criteria are satisfied
2510
Notify user in requested notification format
End

FIG. 25